

*January* 1937

# TECHNOLOGY REVIEW

Title Reg. in U. S. Pat. Office



# technology review

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*they're Milder  
and they Satisfy*

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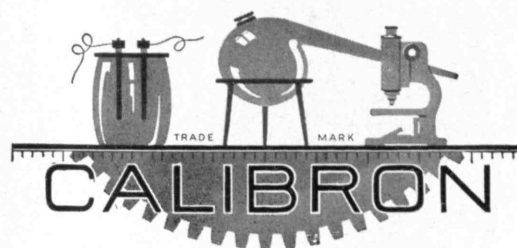
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## THE TABULAR VIEW

AS The Review enters 1937 it shows an increase in circulation of six per cent over last year and an increase in advertising of ten per cent. These increases are doubly welcome because they signify The Review's growing usefulness to both readers and advertisers and because they help to ease the burden of a steadily growing volume of editorial material and of mounting production costs. We feel, too, that they reflect growing prosperity on the part of those who participate in the publication of The Review by subscribing and advertising. ¶ The opening of the New Year is an appropriate time to repeat some of our major editorial objectives whether or not we have been able to reach them. The general section of the magazine, to meet our specifications, should be in content unique and in style stimulating and lively. It must present material unobtainable in newspapers and other publications; it must be interpretative rather than purely informational. "People," remarked a character in a recent play, "aren't interested in news any more. They want to know what's happened." ¶ The chief responsibility of Review writers is to interpret, to integrate discrete items of news and information, to orientate the reader, to give him a judicial, organized treatment of facts. "The trouble with much of what is called popularization of knowledge," John Dewey once noted, "is that it is content with diffusion of information, in diluted form, merely as information. It needs to be organized and presented in its bearing upon action. Here is the most significant phase of the obligation incumbent upon the scientifically trained men . . . of our age." The Review seeks to participate in discharging this obligation.

IN March, 1932, page 250, The Review published a statement which it hoped would be definitive on the possibility of ramie fiber becoming an important textile raw material. At that time we said: "One of the most persistently recurring of current fables is that ramie fiber (also known as rhea or china-grass) is on the verge of revolutionizing the textile industry. . . . A careful examination of the facts demonstrates how fabulous most of these contentions really are." Recent reports and queries from our readers sent us again to our chief consultant on textile fibers, Edward R. Schwarz, '23, Associate Professor of Textile Engineering at M.I.T., and in response he writes: "We have no argument against attempts to produce a very satisfactory ramie fabric. We simply point out that very many attempts have been made over a period of time and, as the *Industrial Bulletin* of Arthur D. Little, Inc. (Number 62), points out: 'It is correctly stated that the history of ramie is "made up of a long series of failures and financial loss."' The fact remains that the data as to the comparative strengths of ramie and other fibers are fragmentary and indefinite. It is also true, because of its fundamental structure, that ramie is inherently brittle. To overcome the brittleness, if eventually this should be possible, will necessitate changes in other properties,

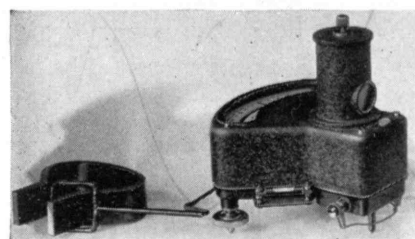


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such as strength and elasticity, which are likely to offset any advantage gained. Service characteristics can be measured only imperfectly by present laboratory methods, but satisfactory service is the final criterion of success and not the ease or cheapness with which the fiber may sometime be produced and spun."

FOR the pictures of Coulee Dam on page 102 and the information about them The Review is indebted to O. G. F. MARKHUS, Assistant Engineer. ¶ The long-leaf pine sequence on page 111 came to us from C. E. PATCH, '02, who is an industrial engineer with the Morton C. Tuttle ('96) Company, a Boston firm widely known as a builder of paper mills as well as the designer of many other important engineering structures. Mr. Patch, whose pictures have frequently appeared in The Review, is an inveterate photographer who finds his skill useful both professionally and for documenting his wide travels. After almost every trip he brings to us a portfolio of pictures and generously permits us to take our choice. ¶ FREDERICK H. SHILLITO (page 109) is instructor in medicine and industrial hygiene at Columbia University, and is on the staff of the Presbyterian Hospital. ¶ EVE WITHERS is a *nom de plume* for a person who has had ample opportunity to observe science and its votaries. We do not venture to speculate whether she writes with her tongue in her cheek. ¶ The photograph on the cover was taken by RICHARD E. POPE of the Technology Photographic Service. The many pictures which are published by us bearing the credit line of this organization give ample proof of the competence of its director, Frank H. Conant, and its chief photographer, Mr. Pope.

## WIRES and CABLES

*insulated with*

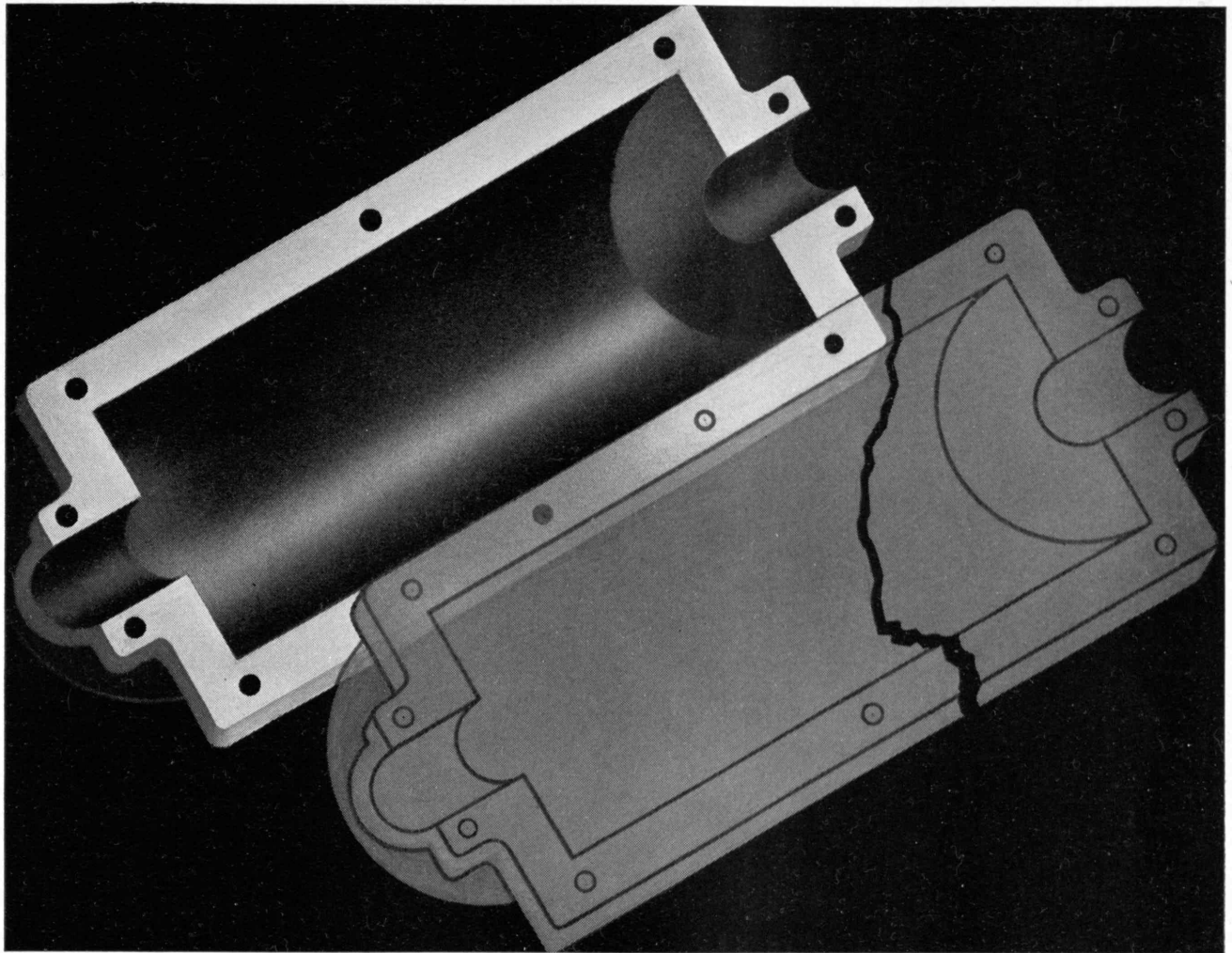
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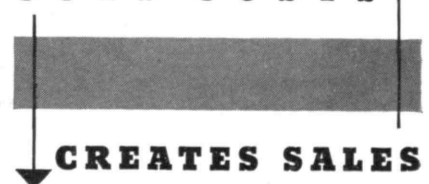
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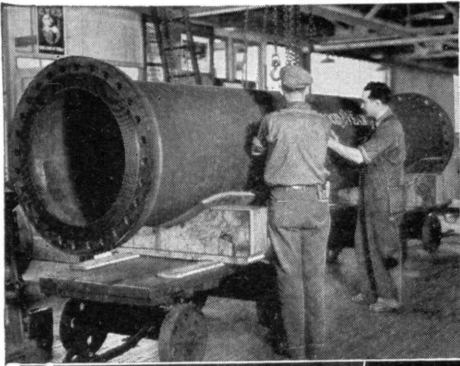
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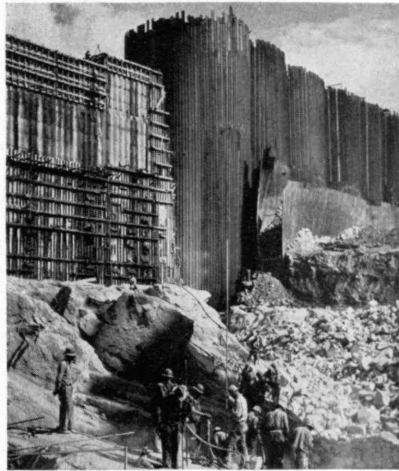
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Coulee's Cofferdam  
Crib (See page 102)

Reclamation Bureau

# THE TECHNOLOGY REVIEW

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VOL. 39, NO. 3

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# THE TECHNOLOGY REVIEW

Vol. 39, No. 3



January, 1937

## The Trend of Affairs

### *Br'er Rabbit in the Wool Business*

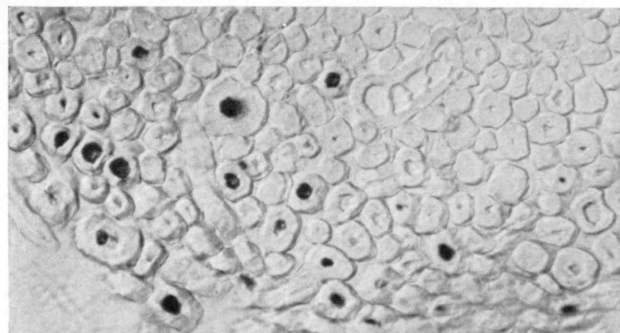
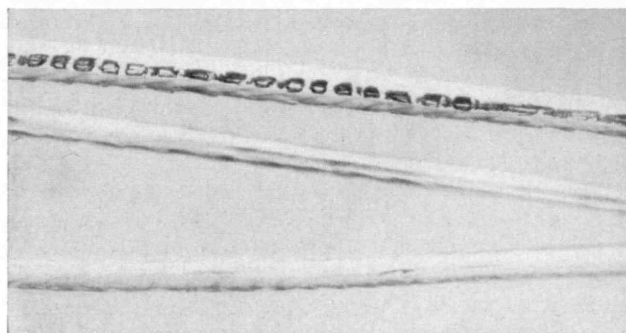
WE heard a reference recently to the "domestic rabbit-wool market" which sent us in search of more information about an industry almost unknown to us and almost everybody else we asked about it. It is general knowledge that the ordinary rabbit supplies fur for felt and skins for fur, but the rabbit-wool industry is a new and fledgling one in this country (the wool began to be imported in noticeable quantities just prior to 1930), despite the fact that French peasant women have been spinning rabbit wool for nearly a century.

One of the surprising facts that we immediately encountered was that already in this country there are such organizations as the New England Rabbit Wool Producers Club and such published literature as "The Angora Wool Farmers' Guide" and "Angora Wool Production." In 1935 there were known imports of rabbit-wool yarn into this country totaling 23,693

pounds. Here was indubitable evidence that Br'er Rabbit had added yarn to his other specialties of fur and felt.

The angora, which is the rabbit from which the so-called wool is obtained, is a native of Asia Minor, but he is now very much at home in England, France, and the United States, particularly in the Pacific Northwest. So silky and fine and soft is the overcoat of this handsome little animal that his fleece has come to be known as *laine de luxe*, or wool of luxury, with prices ranging up to six dollars a pound to prove the aptness of the name. "The fleece," writes William H. Butler in *Textile World*, "compares in fineness to the South American vicuña, is of great tensile strength, very light in weight, pure white in color, apparently warmer than sheep wool, easily dyed, and, even in the long six- or seven-inch fibers, the silky fineness is retained from end to end."

Because of its fineness, however (see illustrations below), angora is very difficult to handle, and cannot be mill-spun without being mixed with wool or silk. In



#### RABBIT WOOL UNDER THE MICROSCOPE

Left. Angora rabbit wool normally contains three different kinds of hairs, typical examples of which are shown. The top strand closely resembles the usual hair formation, the one in the center with its many serrations approximates the structure of sheep wool, while the bottom strand is intermediate in structure between the top two. Right. Cross section of an angora hair

M.I.T. Textile Laboratory





R. Lytle Deming, '31

## NATURAL

## ARTIFICIAL

Left. This flash of lightning seemed to belch forth out of a white-hot caldron in the clouds. Note the back-lighting of the clouds, throwing them in silhouette. Right. In General Electric's Pittsfield laboratory, artificial bolts are discharged as the control and behavior of lightning are studied. Here is shown a ten-million-volt discharge as it arcs and writhes its way between two spheres. Lightning does strike twice, say G. E. engineers. In fact, most fires set by lightning are caused, not by a single spark, but by a series of multiple discharges. Nor is the brilliant flash one observes during a storm a bolt from the sky; it is a union of a cloud streamer with a streamer from the earth

fact, excessive fineness is the source of the local grower's worst headache; the American angora needs to be crossbred with his coarser-haired cousins if a wool that can be used extensively by our mills is to be grown.

Angora is perhaps most widely used as a substitute for cashmere in the manufacture of fine yarn for knitting, either by hand or machine. Cashmere, the lovely, soft wool that is found beneath the hair of goats in Kashmir, Tibet, and the Himalayas and that has been apotheosized by the shawls bearing its name, is now almost unobtainable in this country; opportunity, therefore, knocks at the hatches that are multiplying, chiefly on the Pacific Coast and vigorously on the Atlantic.

Like the sheep, the angora rabbit may be shorn without injury, although a more even wool is obtained by combing. Angoras in the Pacific Northwest are reported to be clipped three times annually, yielding some four ounces each clip. According to Mr. Butler, who seems to speak with authority, there are rabbits which yield as much as 20 ounces annually. Couple these quantities, however small, with the well-known mass-production habits of the rabbit and they become potentially large. The industry will always be a minor one, of course, even with the substantial expansion that may come, but it is none the less interesting if for no other reason than for its demonstration of how goats in the Himalayas can influence the raising of rabbits in the United States.

### Hydrogen for Fuel

**B**LIND, slow, vulnerable to all manner of weapons, the submarine nevertheless remains one of the most dangerous of war craft. Sufficient evidence of its effectiveness is the fact that when England, in spite of her huge fleet and decisively favorable geographical posi-

tion, was staring directly into the eyes of famine at the height of the U-boat campaign, not more than 140 German submarines were in action. Any improvement in the submarine's speed or striking power is, therefore, more than a matter of mere academic interest to the millions whose fate may be tied up with its activities.

Germany, deprived of her underwater fleet by the Versailles Treaty, is again building U-boats, and although most of them are as yet small (20 of the 32 she officially admits having are of only 250 tons), many have the speed and carrying capacity of much larger craft, because they are driven by power plants of novel design. Inherent in the standard Diesel-electric drive of the submarine is great weight and space per horse power. It is not so much the electric motor that causes the difficulty as it is the tremendous weight and space needed for the storage batteries, sometimes one-sixth of the total submerged displacement. With batteries is associated also the ever present danger of chlorine poisoning should salt water leak into the containers. The reason for using such an unsatisfactory form of underwater drive is, of course, that it places no drain on the meager air supply enclosed in the hull; any alternative must meet this severe condition. By use of a special internal-combustion engine invented by the German engineer, Rudolf A. Erren, and of high pressure electrolyzers, which are also a German development, the navy of the Nazis has a propulsion plant consisting of a single power unit which appears to meet this difficulty successfully.

Several years ago, Erren perfected a hydrogen engine for utilizing off-peak power from hydroelectric stations. Excess electric current is fed to electrolyzers (in use for many years) which separate water into its component elements — hydrogen and oxygen — at pressures of

3,000 to 4,000 pounds per square inch. The gases, stored in steel cylinders, are then burned as needed — not necessarily together, for the hydrogen can be used with air or mixed with some liquid fuel. When, however, the two gases in their pure form are used, an expanding medium, such as steam from the exhaust, must be introduced into the cylinder, for hydrogen and oxygen, in the proportion two to one, occupy more space than the water vapor that is the result of the explosion. Operating thusly, the engine exhibits a unique characteristic. It is entirely independent of the atmosphere around it, and, if the steam coming from the cylinders is condensed, does not exhaust into the air. Although superficially such an arrangement seems very much like the island where everyone lives by taking in each other's washing, the engine actually is drawing on the energy that had been used to electrolyze the water. Such qualities immediately suggest its use where air is precious, as in deep mines or in submarines. Men being what they are, the military application was the first to gain attention.

From what little can be seen through the veil that is customarily drawn about things military (not so little at that, if the British press be any evidence) the single-engined submarine is driven, while on the surface, by a Diesel engine which can be quickly converted, when submerging, into a hydrogen-oxygen engine. For that purpose the Diesel has, in addition to its usual auxiliaries, electric ignition, a carburetor, special valves, and other apparatus. Probably no change in compression ratio is necessary, since the Erren engine has been operated with ratios of 12 to one and higher, and with better than Diesel efficiency. The gases are stored separately, under high pressure in small steel cylinders which take up about half the space and less than half the weight of the displaced storage batteries. When the craft submerges, the gases are led to the engine at, or slightly above, atmospheric pressure, burned, and the products of combustion (water vapor) condensed and sent back to the electrolyzers.

According to Hector Bywater, naval correspondent of the London *Daily Telegraph*, "there is reason to believe that British naval authorities are fully informed. . . . Its [the engine's] adoption by the British navy may, therefore, be only a question of time."

### *Ham from Rested Pigs*

EFFORTS have been made in this country to show that meat from sedentary steers is less tender than cuts from athletic cattle, and all are familiar with the full body and fine bouquet that marks milk from contented cows. Now comes a report from the Food Investigation Board of Great Britain's Department of Scientific and Industrial Research that pork from rested pigs is more desirable than pork from tired pigs.

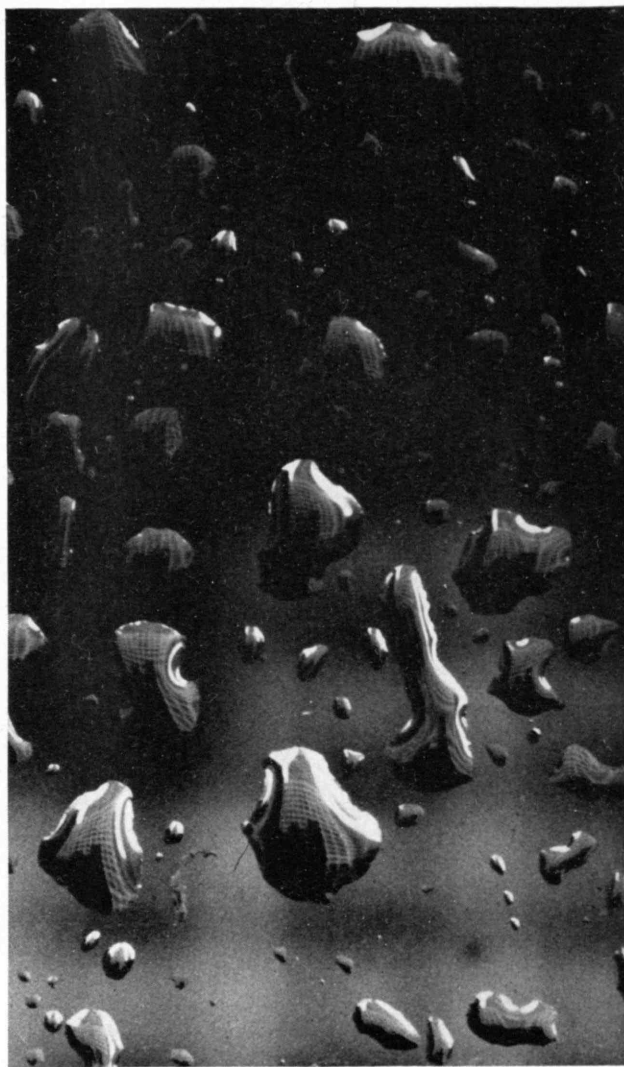
It is all a matter, so it seems, of the electrical resistance of pig muscle. Low electrical resistance promotes the penetration of salt during dry-salting. The muscle of pigs overheated before slaughter has, on the average, a higher resistance than that of properly rested pigs. Equally surprising is the conclusion of the Board that hungry pigs yield more bacon: 48 hours' fasting somehow increases the thickness of the flank.

Those who maintain, as did Ellis Parker Butler, that pigs is pigs will also be surprised to know that English curers prefer farm-killed pigs, whose muscle has a very low resistance, to factory-killed pigs, whose muscle has a high resistance. "The difference," remarks the report, "is due to the shaking of farm-killed pigs during transport to the factory. Factory-killed pigs may also be overheated when slaughtered, and the resulting abnormally high electrical resistance cannot be reduced to the required extent, even by shaking."

After these findings hog-killing time on the old place will never be what it once was, we fear, what with the fasting, the resting, and the shaking.

### *Versatile Virus*

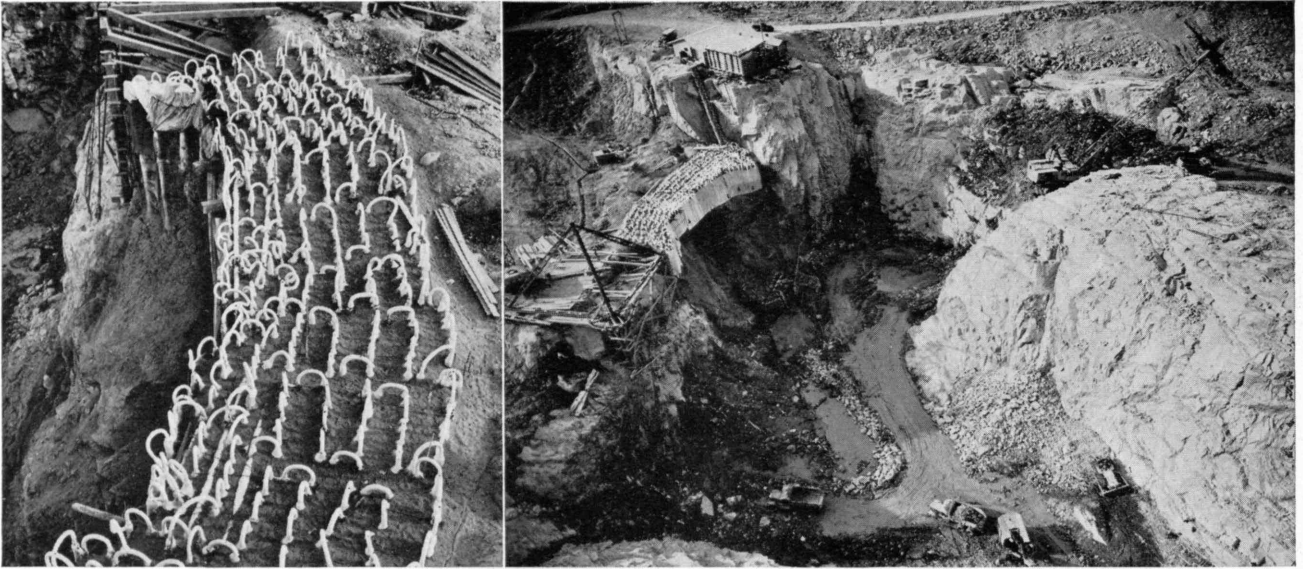
VIRUSES — microorganisms so small as to pass through the porcelain filters that hold back ordinary bacteria — are entities of great deadliness and great versatility. They produce a wide range of serious diseases, including the common cold, influenza, yellow fever, and



MIRRORS OF WATER

*Barney from Black Star*

The Chrysler Building reflected in raindrops. For striking pictures of drops in action see page 104



THESE REFRIGERATION PIPES . . . FORM THIS ICE DAM TO IMPOUND A TORRENT OF MUCK

## LARGER THAN BOULDER

*Which Means That Grand Coulee Dam Is Man's Most Colossal Engineering Project*

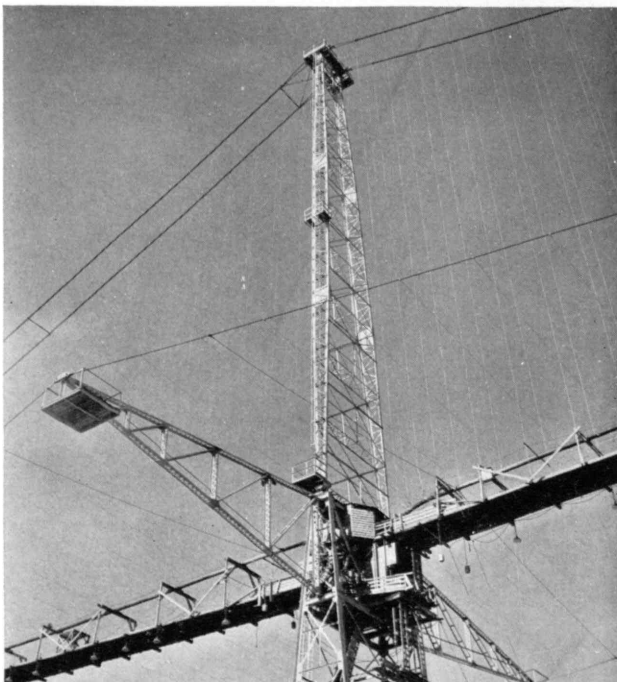
On this and the opposite page are a half-dozen views of the great construction job on the Columbia River, which ultimately will irrigate a million acres and generate nearly two million kilowatts. These photographs are mostly side lights — no picture can give a comprehensive idea of 11 million cubic yards of concrete taking form from the world's greatest conveyor system — but each carries a story of ingenuity and achievement on the part of the Reclamation Bureau and the construction company.

Above. *When construction in the deep gulch shown on the right was threatened by 200,000 cubic yards of loose dirt oozing in, engineers drove refrigeration pipes into the wet muck and with an 80-ton ice plant froze the avalanche to immobility. "This dam has proven very satisfactory," they report, "because it has now been subject to what we consider maximum loads without any particular movement." This artificial ice pack cost \$30,000, but saved \$100,000 in construction costs.*

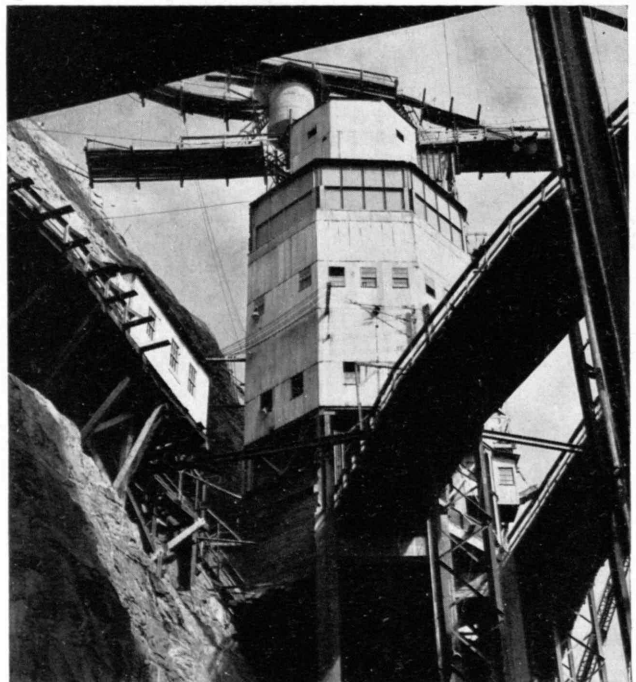
Below, left. *A portion of the center tower of the 3,500-foot aggregate conveyor suspension bridge crossing the Columbia from east-side storage to west mix. The 36-inch conveyor belt travels 400 feet a minute, and above it flows cement in an 11-inch pipe 6,200 feet long.*

Below, right. *This concrete mixing plant, one of two, is called the "House of Magic" because of its unusual capacity (it places a cubic yard of concrete in the dam every seven seconds)*

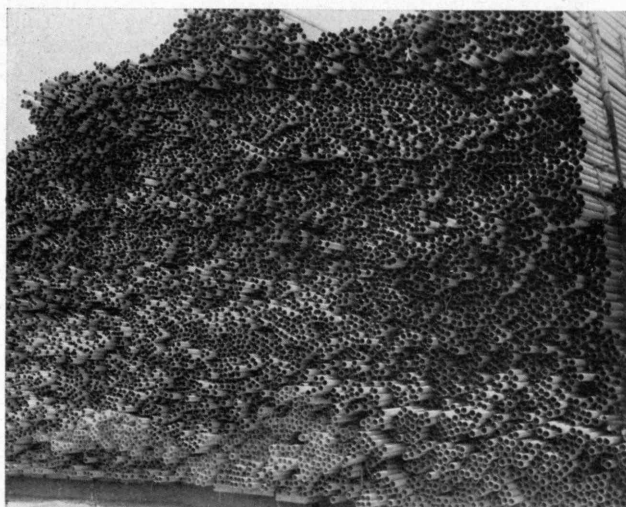
CONVEYOR TOWER



"HOUSE OF MAGIC"







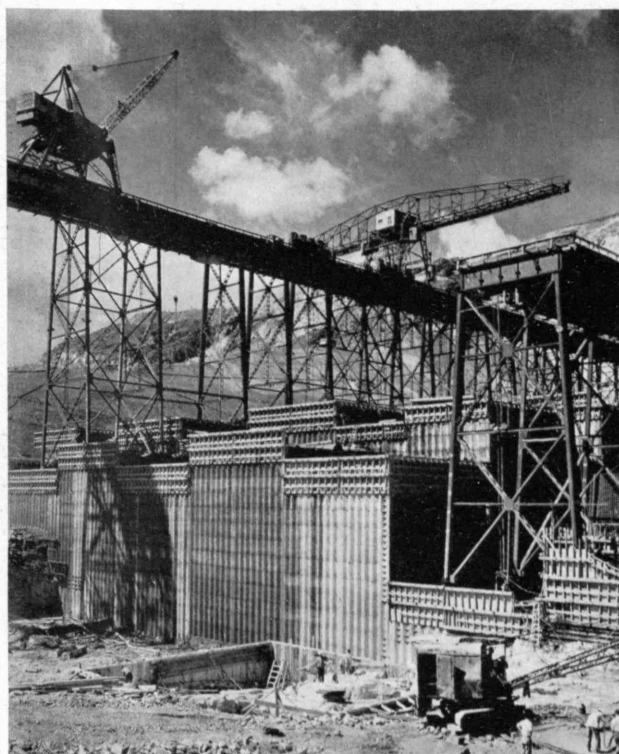
TOTAL LENGTH: 2,300 MILES

... Which is 1,720 miles more of cooling pipe than Boulder Dam has embedded in its monoliths. The chemical action of curing concrete generates heat, which in great dams like this would cause destructive internal stresses and would not be dissipated in several hundred years were the dams not cooled by a web of cooling tubes. Eleven pumps will supply cold Columbia River water for Coulee's cooling. Right. The dam is thus poured in a series of blocks with transverse keyways on their sides to interlock with adjacent blocks

infantile paralysis. They may appear at one time an organism, at another, a protein crystal; such a transmutation is performed by the tobacco mosaic virus. They may produce at one time a benign local tumor, at another, a malignant, cancerlike tumor; such an alteration of effect is characteristic of the virus which produces fibroma in rabbits.

Now it appears that they may join in lethal partnership with bacteria, "ganging up" on the luckless human being and often killing him. Dr. Richard E. Shope of the Rockefeller Institute for Medical Research lately told the Yale Medical Society that he had been convinced by experiments that influenza apparently is produced by the concerted activity of a bacterium and a filtrable virus. The conclusion to which he has been brought must, he pointed out, await proof through investigation in future widespread outbreaks of the disease. The experiments upon which he based his remarks date back 18 years to observations which he and Dr. Paul A. Lewis made on a disease of swine, which first appeared at the time of the great influenza outbreak of 1918 and which so closely resembled the human malady that it was known as swine influenza. This disease was found to result from the joint activity of bacterium and virus. Demonstration by English experimenters in 1933 that a virus is concerned in human influenza seemed to justify this theory, then formed, that a germ and a virus were similarly involved in the human disease.

The scientist contending with this versatile foe is in a worse situation than was Hercules in his wrestling match with Achelous, for though Achelous changed his form at will, he was at least visible. The virus is invisible; yet a new device constructed at the International Health Division of the Rockefeller Foundation makes it possible for the first time to isolate viruses in pure concentration.



Photos from Reclamation Bureau

This new separator is expected to permit closer studies of the disease-producing properties of viruses, with, possibly, consequent improvement in methods of combating their deadly effects.

The apparatus is built on the principle of the cream separator familiar to farmers. It is essentially a high-speed centrifuge operating in a very high vacuum, driven by compressed air, with its rotating parts supported by an air bearing. In it, fluids taken from diseased animals and humans, and containing viruses, are whirled at a speed of 30,000 revolutions per minute. Through this rotation there is set up a maximum centrifugal force of 95,000 times gravity.

The apparatus carries 16 celluloid tubes, each of which will hold seven cubic centimeters of fluid. Its effectiveness has been illustrated in the separation and concentration of yellow fever virus, when three hours' centrifuging at 25,000 revolutions per minute caused most of the viruses to be not merely sedimented out of the solution, but so firmly packed to the bottom of the tubes that the fluid could be poured off and the sediment resuspended in fresh fluid without notable loss of activity.

Another defense against virus activity recently reported by Dr. W. Lloyd Aycock of the Harvard Medical School is an experimental technique which may lead to the determining of a means for detecting persons susceptible to infantile paralysis. The relation between internal glands and mucous membranes is basis for the technique; the membranes are known to play an important part in the infection; internal glands, medical men are coming more and more to believe, play an important part in defense against the disease. Diminishing the secretion of one of the endocrine glands which controls membrane growth in monkeys, then treating half the

monkeys with estrin to restore the weakened linings, following this by artificially infecting all the monkeys with infantile paralysis, the investigators found that the subjects with restored membranes did not catch the disease so readily as did the unprotected, and that their survival rate was better. The gland controlling the growth of the mucous membrane, consequently, is considered to have direct relation to resistance to the disease.

### The Moon and Zostera

WHEN Galileo was told that Johannes Kepler had advanced the theory that the moon influenced the motion of the tides, he expressed regret that so able a

mouths of rivers where the salt water was more than usually dilute. Letters from European scientists brought the information that the same phenomenon was occurring there also. Beds on the Pacific Coast, however, were not affected.

No sudden disturbance in the numbers of any organism can be lightly dismissed by man, for rugged individualism is a political, not a natural, state. Ducks and doctors are alike involved in nature's equilibrium. The rootstocks of eelgrass, for example, are the chief winter food of brant and Canadian geese, while black ducks and fishes nibble at its seeds, and, continuing the cycle, Eskimos depend for a large portion of their diet on migratory birds. Housewives, too, are affected, for the

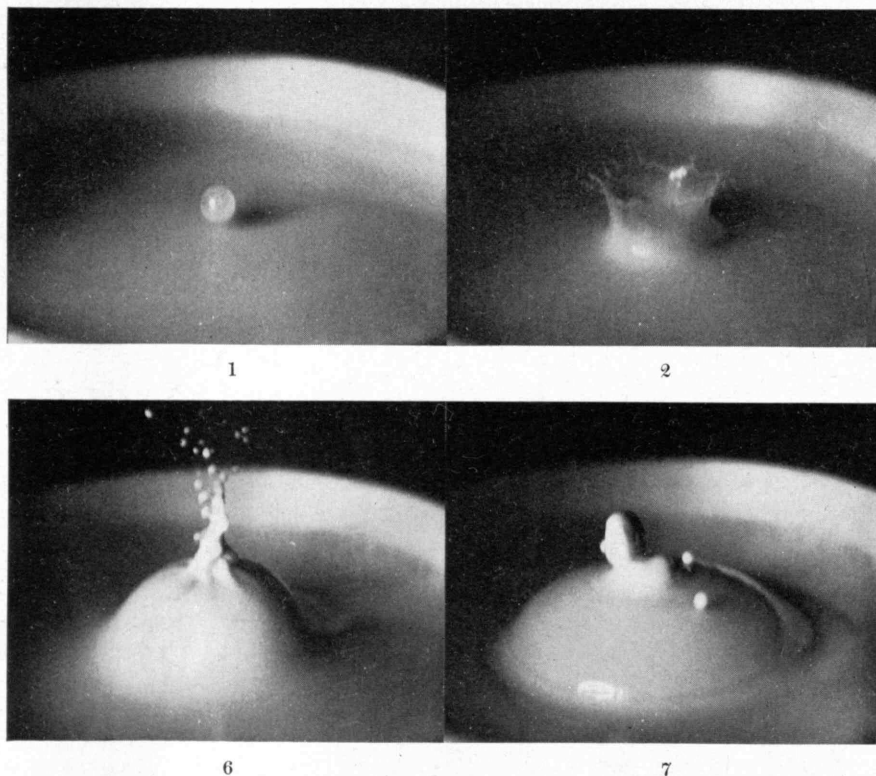
### BIRTH OF A BUBBLE

#### A Drama of Surface Tension in Ten Scenes

When raindrops splash into a pool of water they frequently form bubbles that float on the surface for a brief span. Here this familiar phenomenon — the parturition of a bubble — is captured in detail by the high-speed camera in a sequence of ten pictures. Instead of water, milk is used because the photographic emulsion shows it more clearly.

In picture 1 the drop is plummeting downward toward the surface of the pool of milk. Picture 2 catches the delicate crownlike formation of the splash, and pictures 3, 4, and 5 show the forces of surface tension, like the strings of a tobacco bag, acting to close the crown at the top and to entrap air within. In picture 6 comes the climax as the bubble, with an eruption of droplets, closes tight; in 7, 8, and 9 may be seen its contortions as it overcomes, by a narrow margin, the disruptive forces set up by the splash, and, finally, in 10 the shimmering bubble stands full-bodied and complete.

Photographs by Harold E. Edgerton, '27, et al.



man had seen fit to reintroduce the occult into science. The same suspicious attitude toward our nearest heavenly neighbor still persists among scientists, and the research worker who mentions the moon as affecting the antics of anything but lovers and spiritualists endangers his reputation. Nevertheless, Neil E. Stevens of the University of Illinois has pointed to some pertinent, if not clinching evidence that the moon may supply the solution to a current biological puzzle.

Along the tidal flats and gently sloping beaches that border the two great oceans of the north temperate zone there grows (in many areas, grew) a flowering plant with long, narrow leaves which is officially *Zostera marina*, but is popularly known as eelgrass. On it depend, directly or in devious ways, such varied creatures as wild ducks, Eskimos, fishes, and farmers.

About five years ago, it slowly began to dawn on observers that eelgrass beds were rapidly disappearing. Where once there were acres of the plant, there were in 1932 only isolated patches, and those mainly near the

abundance of food fish is influenced by feeding conditions near shore. When dried, eelgrass leaves are durable, elastic, vermin proof, and, because of air cells in their structure, of considerable insulating value. Canadian farmers, therefore, use the leaves to bank the foundations of their buildings in cold weather, and there are firms which harvest the plant for house insulation.

A biological puzzle of such great extent and importance calls imperiously for an explanation. Many have been forthcoming, generally distinguished by the ease with which they are eliminated, but from intensive research into this plant's life and ecology and from the integration of some widely diversified data have come much interesting information. The disappearance of eelgrass is not an isolated event, but happened at the same time as an unprecedented northward extension of bacterial wilt in corn that appeared to be connected with weather conditions. Furthermore, a search through old records disclosed two other periods of eelgrass scarcity, one including the year 1894 and the other, 1913. Another

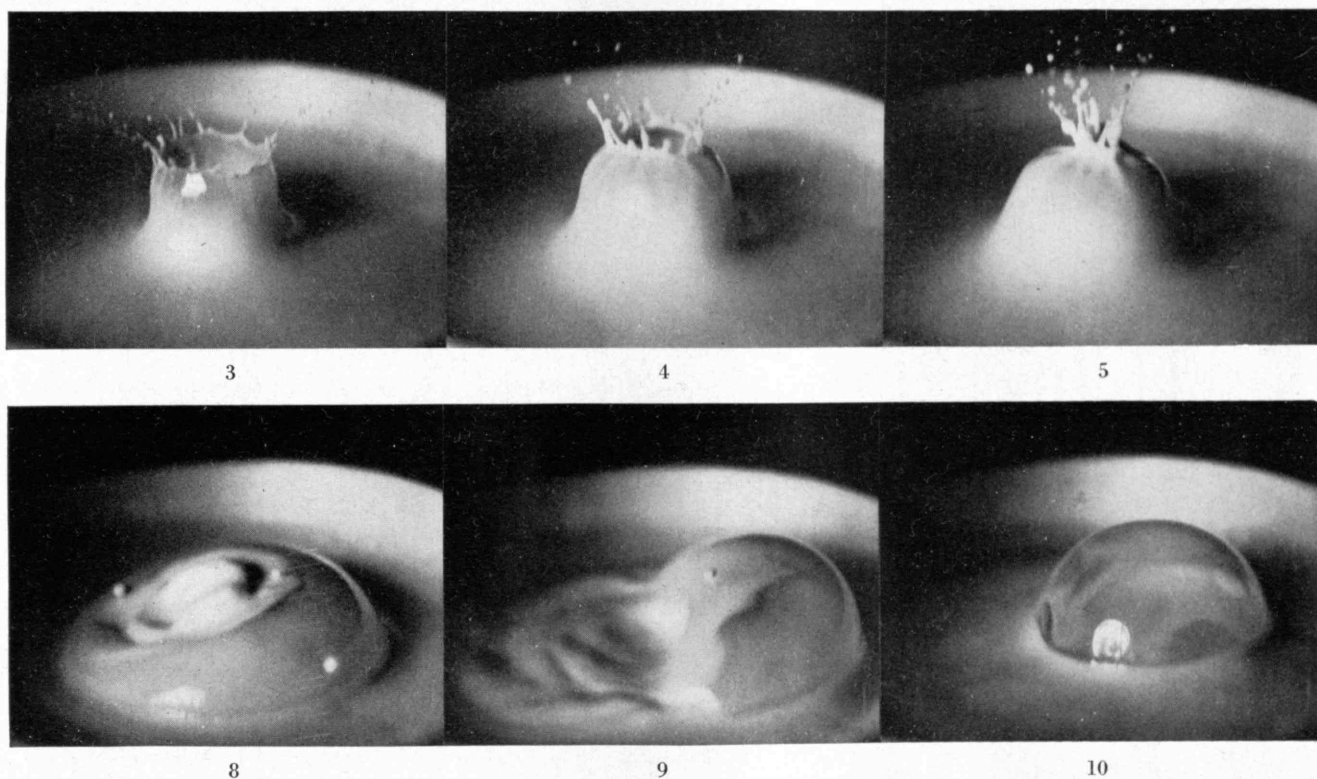


investigator found that optimum conditions require a very narrow temperature range and that any temperature exceeding 68 degrees F. is definitely unfavorable to the plant's growth. Evidence of a slight increase in temperature of North Atlantic waters at the height of the epidemic, if we may call it that, is the collection of tropical fishes and plankton forms in areas where they were previously rare or unknown. It is also known that poor fishing seasons, which, significantly, occur at regular intervals, are associated with an extensive invasion of the Banks by waters of tropical origin. Allowing for the effect of improvements in fishing equipment, the years of minimum yields from the Newfoundland grounds include 1893, 1904-1905, 1913, 1921, and 1929.

The proof of the pudding, after all, is in the eating, and the mark of a successful theory is accurate prediction. If (is this mixing a metaphor?) *Zostera's* unlucky star is the moon, the next period of eelgrass scarcity seems due in 1949 or 1950.

### *Stifling the Imp of Corrosion*

THE little red demon who represents corrosion in the advertisements, like so many other demons who nowadays work for us or work against us, is electrical in his innermost character. The name by which he is known, his familiar name and the one to which he answers readily enough, is chemical, but his family, never-



Each alternate minimum coincides fairly closely with a period of eelgrass scarcity. But what part does the moon play in all these varied proceedings?

Astronomers, like stockbrokers, have a fondness for graphs. One, looking like a slightly intoxicated sine wave with peaks about  $18\frac{1}{2}$  years apart, shows in the dogmatic manner of graphs that the moon reached its maximum northerly declination in 1895, 1913, and 1932. The conclusion, plausible if not probable, is that the moon, in its cyclic meanderings over the heavens, shifts major ocean currents so that tropical waters invade areas normally covered by continental waters of polar origin. The eelgrass in such areas, dependent for maximum resistance on closely adjusted environmental conditions, is weakened by subtle but dangerous changes in that complicated, little understood conglomeration of solutes that is sea water, and parasites always present in or about the plant become dominant. A condition of eelgrass scarcity develops and continues until such time as a resistant strain evolves or conditions change.

theless, is electrical. Indeed the cause of corrosion appeared in the early experiments of Galvani and Volta which stood at the very beginning of the modern development of electrical knowledge and theory.

When dissimilar conductors are brought into contact, a difference of electrical potential is set up between them. When a metal is brought into contact with water, a difference of potential is set up, and, if the metal is one which like zinc, iron, or aluminum is more electropositive than hydrogen, then chemical action commences. From the time of the earliest experiments on the subject there has been discussion whether the difference of potential arises from the mere contact of the dissimilar substances or from the chemical action, or tendency toward chemical action, between them. Scientists have not come to an entire agreement, but all agree that the difference of potential is the cause of the corrosion which results.

When iron is in contact with water it becomes negatively charged. The positively charged hydrogen ions which are present in water in small amount and in acid

solutions in much larger amount are attracted to the negatively charged metal; they give up their charges, hydrogen escapes in the form of gas, and a corresponding amount of the iron goes into solution and is corroded away. Any means which reduces the number of hydrogen ions in the solution reduces the amount of the corrosion. We circumvent nature by conforming to her rules. Alkaline solutions contain fewer hydrogen ions than acid or neutral ones. They produce less corrosion; this is the evident reason for the use of triethanolamine and similar substances as anticorrosives. But there are other sub-

stances, operating on a different principle, which reduce corrosion and under favorable circumstances almost totally prevent it in the presence, even, of strongly acid solutions. They are called inhibitors. Small amounts of them added to acid solutions have no material effect in reducing the acidity or hydrogen ion concentration, but they nevertheless protect the metal against the acid to a remarkable degree.

Inhibitors yield positively charged ions which are apparently attracted to the negatively charged surface of the metal. There they form a coating which, to a greater or less extent, prevents the hydrogen ions of the liquid from coming into contact with the metal. The hydrogen ions are not discharged, hydrogen gas is not given off, and the metal is not dissolved. This realistic and mechanical explanation of an effect that seems almost magical has been confirmed by the recently reported experiments of Mann, Lauer, and Hultin of the University of Minnesota.

To determine the rate of uninhibited corrosion these investigators exposed samples of mild steel to normal sulfuric acid solution at 25 degrees for 46 hours and calculated the loss in weight of the metal in grams per square centimeter per hour. They then tried the effect of adding small amounts of ammonia, of aniline, and of other ammonia derivatives, and calculated their per-cent effectiveness in reducing the amount of the corrosion. The best inhibitors were 90% effective, some of them nearly 100%, when as little as 0.25 gram of nitrogen in the form of the inhibitor was added to 100 cubic centimeters of the acid solution. This is only about one-sixth as much of the inhibitor as is needed completely to combine with the acid.

The ammonia molecule consists of three hydrogen atoms attached to a single nitrogen atom. The positively charged ammonium ion consists of a single nitrogen and four hydrogens. Aniline, which differs from ammonia in having a bulky phenyl group substituted in place of one of the hydrogens, is a better inhibitor than ammonia, evidently because the bulkier phenyl group gives the ion more covering power. If a second hydrogen of the ammonia molecule is replaced by another group, say a methyl group, then the substance is more effective; if a third hydrogen, then better yet. If the methyl group is substituted in the phenyl, two of the original hydrogens of the ammonia being left, then it increases the size of the group in which it is substituted and gives it greater covering power and inhibitor action. But the same methyl group is more effective if it is attached directly to the nitrogen where it is nearer to the positive charge of the ion and in a better position to cover the metal. Diphenylhydrazine, whose molecule is virtually two molecules of aniline linked together through the nitrogen atoms, has more than twice the inhibitor action of aniline, presumably because the two phenyl groups in the same molecule repel one another, flatten out, and effectively increase the area of the molecule. In short, the results demonstrate fully that the shape of the ion is something which may be known and reckoned upon.

Organic chemists can build up their molecules with as much certainty and precision as if they were building toy houses out of wooden blocks. They can choose among their molecules those which ought, according to the best theories of corrosion, to exert the greatest inhibitor action. When they try them out, they find that the molecules behave in ways of their own, in ways, moreover, which give new insight into the stresses and strains which exist within them, into the mechanical effects of the affinities by which they are held together.



*Triangles point skyward on the mast of a vessel*

Lewis P. Tabor, '22

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## Mass and Bulk

THE massive mind may not necessarily be an inhabitant of the bulky brain; most recent developments bearing on this psychological truism were recently made public by way of Dr. Ales Hrdlicka, curator of physical anthropology of the Smithsonian Institution. In excavations last summer Dr. Hrdlicka found the skull of an Aleutian Islander. Its brain capacity is 2,005 cubic centimeters — only 25 cubic centimeters less than that of the Russian author, Turgenieff, whose brain was the bulkiest known in man's history. The Russian, whose brain weighed 74 ounces — about an ounce more than that of the Aleut — would appear to give the lie to the psychologist's generalization but for the fact that an average male brain of 53 ounces, or about 1,450 cubic centimeters, sufficed an obscure Corsican soldier in his rise to become emperor of the French as Napoleon, and the fact that a brain weighing only 45.3 ounces produced the "barbaric yawp" that made Walt Whitman one of the two or three most widely read and influential American writers.

The unsung Aleut of the mighty brain bowl left behind him a perfectly normal skull, according to Dr. Hrdlicka, who reported it as showing no signs of pathological disturbance such as gigantism or water on the brain, which might have affected its size. The owner probably had a brain normal in all but bulk. The Smithsonian Institution's announcement declared it reasonable to suppose, however, that the Aleut was a man of exceptional intelligence, and that, if he had any chance at all, he made his mark in the world.

A device likewise came to public ken last fall, which one day may be of indirect assistance in determining why the Eskimo, probably kin of the Aleut, with a brain bigger than the average, has not done so much with it as the Hindu, whose brain in bulk is below the average. This device constructed of glass, rubber, and metal, to enable physicians to study the functions of the brain by means of a dummy, was perfected by Drs. Temple Fay and W. B. Chamberlain of the medical school of Temple University. By means of it, pressure changes occurring inside the arteries and veins of the normal brain can be demonstrated, as can those which take place in the presence of tumors and head injuries. Artificial coma also may be produced and studied, and the way the brain is bathed by the cerebrospinal fluid can be shown.

By the use of such mechanical aids, with studies of electrical brain waves, the cause for discrepancies between might of mind and bulk of brain is sought.

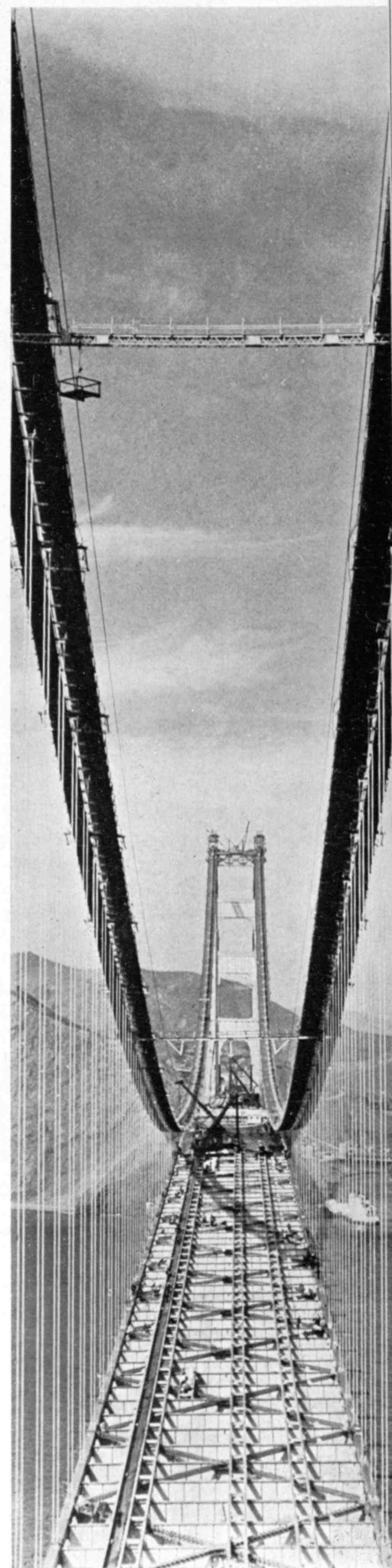
## Heavy Water's Heavy Industry

THE benefit of a fundamental scientific discovery is twofold. Besides opening the way to further discoveries it suggests new types of experiments; these tax the capacity of existing experimental methods, with the result that old processes are improved to new usefulness. The direct importance of the discovery of heavy hydrogen and heavy water by Professor H. C. Urey is familiar and needs no emphasis, but the indirect benefits are proving to be less obvious.

As the work on heavy water progressed it became evident that the central problem of chemical isotopic research was the preparation of water rich in heavy oxygen. The separation by electrolysis, so successful in the case of hydrogen, fails in this case. The various theories of matter have been ransacked for processes which might effect a useful amount of separation, and two offering some promise — fractional distillation and fractional diffusion — have been found. Professor Urey prefers the first alternative and has devoted himself to the improvement of apparatus for distillation. The demands of the petroleum industry have led to great improvements along this line during the past 10 years, but no existing apparatus offered any hope of isolating even one gram of heavy oxygen with any reasonable expenditure of time and power. Acting on a suggestion of Dr. Pegram, Professor Urey has developed a new type of still which is much more effective than any previously known. Whether this still will solve the oxygen problem or not it seems certain to make a lasting impression on industrial distilling methods, and it is a beautiful example of the remote and unexpected practical uses that frequently derive from pure science.

Although fractional distillation by Professor Urey's method appears to be the most promising method of separating isotopes, other possibilities have been studied. One of the most interesting of these has been developed at the *Technische Hochschule* in Berlin by Professor G. Hertz, who has been interested for some years in industrial applications of the separation of gases by fractional diffusion.

*Breath-taking majesty of line and curve as the 4,200-foot span of the Golden Gate Bridge moves toward completion. The tower shafts of this bridge are by far the largest structural steel members ever assembled*



*Schoeb from Nesmith*



#### PREFABRICATED BATHROOM UNIT

*Buckminster Fuller of Dymaxion fame has designed for Phelps Dodge this mass-production bathroom in which the three "primary bathroom fixtures" are stamped from metal and are integral parts of the floor and walls of the lower third of the room "or what might be called the splash sector." Other features: sliding doors, atmospheric control, finished weight of approximately 150 pounds (compared to 1,000 pounds or more for old-style bathrooms), indirect light in bottom of bathing chamber, electric heating system, Venetian blind on door to bathing chamber*

*F. S. Lincoln, '22*

The basic phenomena were worked out by Graham in 1846, but when simply applied the unit process leads to separations so small as to be useless. Professor Hertz designed and built an apparatus wherein the gas mixture to be separated is forced through a complicated network of glass and clay tubes in such a way that the unit process is automatically repeated many thousands of times, until a steady state is reached in which the heavier portions of the mixture are concentrated in one end of the network. His final apparatus contained 50 mercury diffusion pumps and filled a large room. He was able to separate completely the isotopes of neon, but the apparatus failed when applied to water vapor. Repeated passage through the hot mercury vapor in the pumps partly decomposed the water to oxygen and hydrogen, and the oxygen gas flooded the output end of the apparatus. Attempts are being made at the Institute to apply the Hertz principle to a more practical apparatus, and some promising results have already been obtained.

During the first few months following the discovery of heavy hydrogen and heavy water, the amounts available for study were small, and a method of analyzing for heavy isotopes was needed. The specific gravity of water is sensitive to the presence of heavy isotopes, and it can be measured readily and accurately by any of a number of methods which have been known and used for many years. However, the combination of new requirements—small sample and high precision—was at the limit of the possibilities of any of them. At the Kaiser Wilhelm Institute for Physical Chemistry in Berlin-Dahlem, a method was devised for measuring the specific gravity of samples of water as small as five

milligrams to an accuracy of one part in 10 thousand. The sample was contained in a tiny glass pycnometer sealed to a closed, thin-walled bulb smaller than a match head. The weight of the whole was adjusted so that when filled with ordinary water and placed beneath the surface of water cooled to the temperature of melting ice, at a surface pressure of one-half atmosphere, it remained suspended with no tendency either to rise or sink. When filled with slightly heavy water and immersed under the same conditions it would sink but could be restored to equilibrium by decreasing the pressure on the water, so expanding the thin-walled bulb and increasing its buoyancy. From the increase in pressure required, the specific gravity could be calculated.

When large samples of water became available and greater precision was required, a variation of this method was developed at the Institute. Water is generally regarded as an incompressible fluid, but it is easy to demonstrate that an increase in pressure of one atmosphere causes a decrease in volume of about 40 parts per million. Thick-walled glass floats are much less compressible. Such floats were adjusted to remain suspended when totally immersed in water at the temperature of melting ice and one-half atmosphere pressure. When immersed in slightly heavy water under the same conditions, the floats rose and equilibrium was restored by changing the pressure until the heavy water had the same density as ordinary water. These floats were extraordinarily sensitive: A pressure change of one two-thousandth of an atmosphere was sufficient to produce a readily observable effect on them. The precision obtained was one part in 10 million on the specific gravity.



# Health Hazards in Industry

## *The Campaign Against Occupational Diseases*

BY FREDERICK H. SHILLITO

WITHIN the factory walls of modern industry can be found every imaginable climate and environment that Nature has in her repertory of extremes — plus a few others that in their synthetic subtlety go far beyond natural discomforts. In steel mills, blast furnaces radiate heat much greater than the hottest desert wind; around paper machines there may be a wet, steamy atmosphere as thick as the proverbial London pea-soup fog and as dripping as the jungle; photographic and light-fast operations place workmen in darkness comparable to the darkest night; refrigerated rooms surround others with Arctic coldness; some processes, particularly in mining and grinding, stir up miniature dust storms that for appearance might have arisen from the mid-West dust bowl; over bubbling vats may hover atmospheres containing chemicals more insidious than volcanic gases in nature.

These potentially harmful industrial environments are multiplying as manufacturing, in response to scientific discovery, becomes technically more complex and synthetic in its processes. Fortunately, however, as industrial hazards increase, we find intelligent industry invoking science again — this time to circumvent the dangers of these unnatural environments. Physicians, with special interest in industrial health problems, are working coöperatively with engineers to point the way toward safer working conditions.

Mortality statistics strikingly emphasize the need for an expert approach to industrial hazards. A study by Louis I. Dublin of the Metropolitan Life Insurance Company of the life expectancies of 3,250,000 insured industrial workers has shown that men between the ages of 20 and 40 years who are engaged in industry have an expectancy of life shorter by about six or seven years than that of the average individual. Workers in older age groups likewise show shorter life expectancy, but to a less marked degree, as might be expected. Dr. Dublin has reported two studies of this nature and it is encouraging that the more recent study shows an improvement in the industrial worker's life expectancy.

The United States Public Health Service has had the opportunity of studying, since 1917, the incidence of disease in 160,000 living workers. This is in contrast with Dr. Dublin's figures, which deal only with death statistics. All of the ordinary diseases necessitating absence from work for a week or more are reported to the United States Public Health Service. According to Dr. R. R. Sayers of this department, the study is already showing results in that certain industries can be shown to have unusually high incidence of respiratory diseases. Groups of employees exposed to high temperatures and drafty positions suffer a high pneumonia rate. Respiratory diseases are three times as great in granite cutting as in general manufacturing and the rate of pulmonary

tuberculosis is about 40 times as great. The disclosure of such facts makes imperative the type of industrial survey that will lead to improvement in working conditions.

The technique of the industrial physician in aiding industry's campaign to raise the life expectancy of workers to the normal figure rests on a thorough knowledge of the human body and on a thoroughgoing analysis of a given industrial environment, in so far as it is different from the natural, outside weather. Temperature, humidity, movement, quality, and pressure of the air breathed by the worker must be determined; types and degrees of radiant energy present should be known; and the chemical and physical characteristics of all materials handled, elaborated. With this information in hand, a physiological study is then made which consists, in simple terms, of the determination, by medical physical examination and laboratory investigation, of the effects of the particular environment on the normal man.

As the physician well knows, man would suffer far more if it were not for his very great capacity in protecting himself against harmful environments. This activity, on the most part wholly unconscious, probably stands second only to reproduction of the species in importance as a vital function of life. The physiology of this protection is exceedingly complex, but let me, despite the danger of oversimplification, describe a few of the processes that are particularly important in resisting the hazards of industrial environment.

First of all, the skin, which forms a supple, pliant covering of the body, is well adapted to resist the rigors of industrial environment. The organs of the interior of the body are vulnerable to any drying-out process. When any considerable amount of the skin is destroyed, as in burns, the evaporation of body fluids proceeds rapidly, the blood is concentrated, and its viscosity increases to a point where it impedes its own flow. Such a condition will prove rapidly fatal. The skin, without being permeable, maintains body fluids without dangerous loss by evaporation. Only enough fluid is evaporated from the skin to aid in maintaining body temperature at its constant level.

This function of the skin in helping to prevent changes in body temperature is important. The vital tissues endure changes in temperature very poorly: A rise of 10 degrees F. is practically incompatible with life. The human heat-regulating mechanism keeps the body temperature constant within a few degrees. In the absence of disease, body temperature practically never rises more than two or three degrees F.

The problem is to get rid of heat generated within the body due to the physiochemical processes of life. When a man is quiet, the body generates about 400 British thermal units per hour. This amount of heat, not very

great, is dissipated easily in a number of ways, such as by evaporation of body moisture into air breathed, by direct radiation of heat from the body surface, by convection, by conduction, and by invisible evaporation of skin moisture. These means of losing heat are more or less constant and are about sufficient to dissipate all of the excess body heat at ordinary room temperatures.

Matters are quite different, however, when the body generates excessive heat by muscular exertion or experiences difficulty in heat dissipation because of high room temperatures, as near blast furnaces. Under such circumstances the usefulness of the skin as a protection against the environment is manifest as it pours literally quarts of water over the surface of the body in the perspiration. The evaporation of this water cools the body. This simple process is vitally important. It is the last line of defense against disastrous rises of body temperature.

Another phase of man's physiology which is useful in protecting him against harmful industrial environments is the respiratory tract. In the first place, the sense of smell warns when air differs qualitatively from normal outside air. Odors can be detected when only the minutest trace of materials is present in air. Unfortunately, fatigue of the olfactory sense develops rapidly and workmen become accustomed to a long continued odor. Furthermore, high concentrations of materials may be quite odorless. The investigator, however, can often trust his sense of smell in leading him to correct assumptions as to the presence or absence of odorous contaminants in the workroom. Related to the sense of smell are a series of reflexes which often do protect workmen against noxious fumes. These consist of uncontrollable coughing, sneezing, lacrimation, and discomfort. These reflexes are set up when irritants such as acids are present in the air. They are the forces that drive the uninitiated person away from dilute concentrations of ammonia gas or nitric oxide fumes. This mechanism is not entirely trustworthy; often it does not operate in high concentrations of chemicals. For instance, nitric oxide fumes can sometimes be breathed deeply into the lungs without the slightest sensory discomfort. The lungs are thereby injured and serious effects, even fatal, can follow.

Air passing through the nose and bronchial passages must be cooled or warmed to body temperature. It has to be humidified and cleaned. These things are done in the upper air passages in the nose and throat. At the nostrils of the nose coarse hairs trap large floating particles, such as lint or scaly materials. Inside the nose the air is brought into contact with moist, sticky surfaces, which cause all but the finest particles to adhere. This is fly-paper action. Going down through the bronchial tree the air is forced through smaller and smaller passages lined with moist, sticky walls and exceedingly fine hairs, called cilia. An undulating movement of these hairs keeps pushing particles extracted from the air back toward the throat, where they can be coughed up. Eventually the air passes through passages about one-tenth millimeter in diameter and enters the final respiratory sac. The filtering and purifying mechanism is finished. At this point, absorption takes place and the air must be clean and pure.

IN considering the health hazards in industry, therefore, it is seen that all effects necessarily fall into one of two groups: (1) effects upon the protective mechanism of the body, such as the skin, mouth structures, membranes of the respiratory tract, and so on; (2) more widespread effects due to absorption beyond the sphere of the protective mechanism.

In the first group (physical changes in tissues comprising part of the protective mechanism) probably the simplest illustration is a burn caused by a small drop of spattered molten metal. The only tissue affected is the skin, which has suffered injury while serving its function as a protective coat over the underlying tissues. The body as a whole has not been affected, except by the discomfort of pain and the possibility of secondary infection. Related to this type of injury are a host of dermatoses (affections of the skin) caused by contact with materials such as dyes, acids, solvents, oils, and so on.

This problem of the occurrence of skin diseases in industry is a very serious one. Workers particularly well trained and well adapted to a certain operation may be forced to leave it because of a troublesome dermatitis caused by some substance contacted in the work. The lesions often become secondarily infected and are difficult to treat medically. It is also practically impossible to determine the material causing the trouble by examining the skin lesion. The dermatitis may be caused by any one of many different substances and yet have no characteristic appearance to distinguish the cause.

Drs. J. J. Eller of New York and Louis Schwartz of the United States Public Health Service have reported that 65% of occupational diseases are dermatoses, that 20,000 cases in the United States are forced to lose working days each year. Furthermore, it is estimated that one per cent of all employees have occupational skin dermatoses. Many of these conditions are quite trifling, but can be annoying to the individual affected. Furthermore, the break in the skin is a potential site of a serious infection at any time. It is obvious that there must be a high cost to industry — direct or indirect — associated with the fact that the human skin is so vulnerable to external agents.

The membranes of the nose, which play a protective rôle against noxious gases and fumes, are themselves damaged by certain of these materials — particularly by irritant substances which settle out of air rapidly, such as chromic acid spray or certain oxides of arsenic. Such substances actually destroy the structures of the nose, giving rise to perforation of the nasal septum and to chronic nose conditions. Other substances, such as cement dust, may pass through the nose and not be trapped until the larynx or upper trachea are reached. At these points irritation of tissues will result in hoarseness of the voice and in cough.

The question often comes up as to the possible harm from industrial dusts composed of large flaky or fluffy materials. Assuming that these materials are perfectly inert, it is still true that the nose has to strain all of them from the air. This process will plug the nasal passages and may result in upper respiratory infections if the materials are present in large amounts. If such a dust cannot be eliminated, the (*Continued on page 122*)





NURSERY: AGED EIGHT MONTHS

*Seedlings of long-leaf yellow pine growing in the sandy, irrigated soil of West Virginia Pulp and Paper Company's nursery in South Carolina*

## Long Leaf's Life History

*As the Paper Industry Invades the South, Here Is How the Plebeian Pine Is Cultivated by Far-seeing Paper Companies*

PHOTOGRAPHS BY C. E. PATCH

NEWSPRINT from Southern pine is still, practically and financially speaking, just around the corner, but kraft paper and board is being manufactured in increasing quantities in the South. In the five-year period, 1928 to 1933, for example, Southern kraft-board tonnage increased from 97,200 to 433,700, while Northern tonnage was declining from 113,700 to 81,300. At present, large mills are under construction in South Carolina, Texas, and other Southern states. In the next quarter century the loblolly, the slash, and the long leaf may bring prosperity to many near-moribund towns in that strip of scraggly pines, some 150 miles wide, that sweeps down the coast from Virginia to Texas.

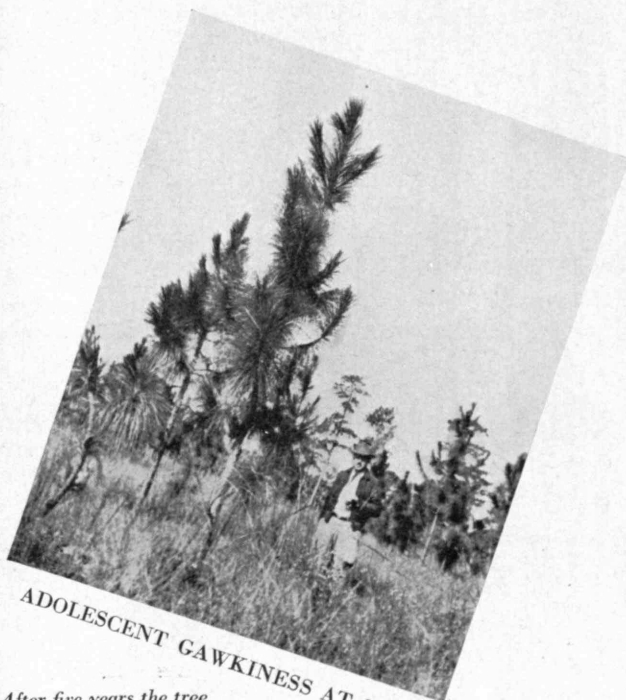
One of the great advantages of Southern pine is the rapidity with which it grows. The adjacent pictures tell the story of this growth, but implicit in them is another and more important story. Not even pine trees rising to maturity in 25 or 30 years could keep pace with an expanding paper industry that made no efforts to conserve and replant. There are evidences, as these pictures testify, that the more intelligent stumpage owners are cooperating in reforestation programs and are learning the art of silviculture.

In some sections of the South the natural-growing fifth-year pompons are cut and sold in the North for Christmas decorations, a practice which is causing apprehension in the ranks of conservationists. Other facts about long leaf: The trees bear a heavy crop of seeds only about every fifth year; the wood cannot be floated to the mill because some of it is too heavy to float even in brackish water; cost of Southern pine is about a third less than Northern hemlock or spruce.



POMPON: FIVE YEARS LATER

*Transplanted to denuded areas, the seedling looks like this after four years. Over this long period the pine displays little obvious growth, the white bud remaining at ground level, amply protected by the pompon of long needles. What happens is that the plant grows downward; unseen, the taproot penetrates the soil three or four feet in preparation for the rapid growth just beginning at the stage this picture was made*



ADOLESCENT GAWKINESS AT NINE

*After five years the tree makes great strides until the 15th year, when a slower pace is assumed. By the time it is 25 or 30 years old, depending on soil conditions, it is large enough to be used for pulpwood and is cut by two-man crews, as shown at the left*



MATURITY: DESTINED FOR PULP

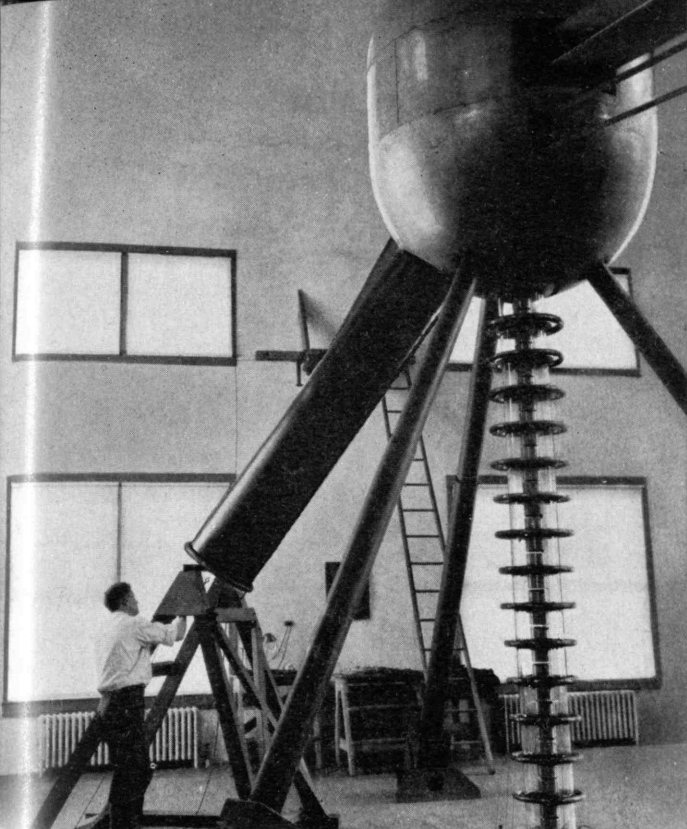
# The Philosophy of Science

## Fifth in a Series of M.I.T. Library Reading Lists

COMPILED BY MARGUERITE CHAMBERLAIN, EASTMAN LIBRARIAN

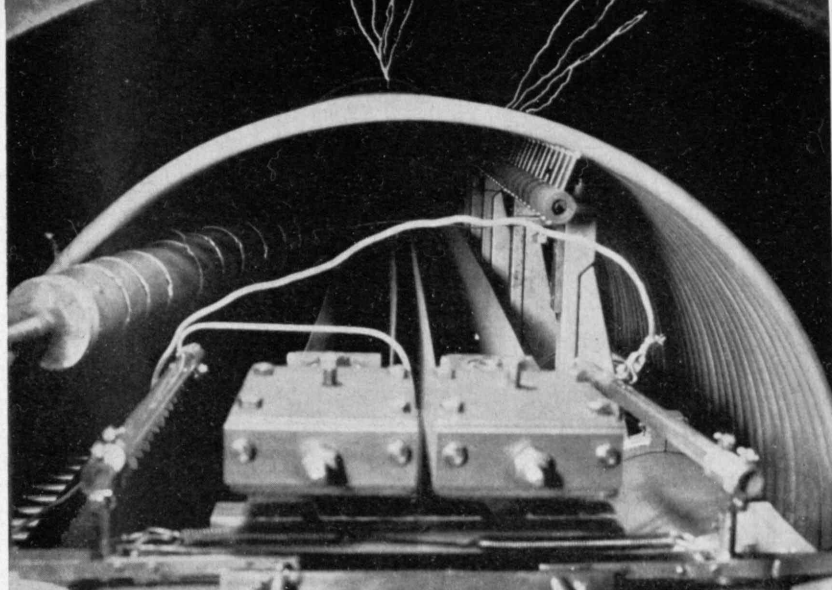
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- BRIDGMAN, P. W. The logic of modern physics. Macmillan, 1928. Hollis professor of mathematics and natural philosophy at Harvard.  
"No recent book on physical science of any real value has equaled 'The Logic of Modern Physics' for its logic, its sweeping vision, its economical and consequently esthetic consideration of a subject which interests and intrigues all men." — *The Nation*.  
——— The nature of physical theory. Princeton University Press, 1936.  
"Packed solidly with characteristic Bridgman hard-headed opinion, covering experience, thought, language, logic, mathematics, relativity, and wave mechanics." — W. M. Malisoff in *Philosophy of Science*.
- BURTT, E. A. The metaphysical foundations of modern physical science: an historical and critical essay. Revised edition. Harcourt, Brace, 1925.  
"Let no plain man be scared away by the word metaphysical in the title." — *Saturday Review of Literature*.
- CASSIRER, ERNST. Substance and functions; and Einstein's theory of relativity. Translated by W. C. Swabey and M. C. Swabey. Open Court Publishing Company, 1923.  
"A work deserving the closest study on the part of logicians, natural scientists, and philosophers." — *Isis*.
- COHEN, MORRIS R., and ERNEST NAGEL. An introduction to logic and scientific method. Harcourt, Brace, 1934.  
"As an elementary introduction to the meaning and function of logic, this book is quite valuable. It is intended to introduce its subject to college students, but it may profitably be read by the general reader. The whole book is suffused with concrete, everyday illustrations." — *Isis*.
- DANTZIG, TOBIAS. Number, the language of science: a critical survey written for the cultured nonmathematician. Second edition, revised. Macmillan, 1933.
- DAVIS, HAROLD T. Philosophy and modern science. Principia Press, 1931.  
"A review of past and current beliefs, replete with quotations and references . . . intelligible to the layman and valuable to the scientist." — *Isis*.
- ENRIQUES, FEDERIGO. Problems of science. Translated by Katharine Royce; introductory note by Josiah Royce. Open Court Publishing Company, 1914.  
"Most thorough and synthetic treatment of the problems of scientific methodology. . . . [The author] approaches his problems with the training of the mathematician and the logician." — *Introduction*.
- JEVONS, WILLIAM S. The principles of science: a treatise on logic and scientific method. Second edition. Macmillan, 1924. [Preface, 1877.]  
"A classic, too important to omit." — Tenney L. Davis, '13.
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"Reprints, with some alterations, of articles that have recently appeared in the *American Scholar*, *Scripta Mathematica*, and the *Yale Law Journal*." — *Preface*.
- LEE, RICHARD E. Backgrounds and foundations of modern science: an integration of the natural sciences for the orientation of college freshmen. Williams and Wilkins, 1935.  
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- LENZEN, VICTOR F. The nature of physical theory: a study in the theory of knowledge. Wiley, 1931.  
"Stimulating analysis of physical concepts and theories." — Leigh Page in *Science*.  
"Valuable source of information for the philosopher who is seeking to recast his epistemology. . . ." — H. T. Davis in *Isis*.
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"Every physicist and most philosophers will put it on their required list." — *Scientific Book Club Review*.
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"The scientific aim, mood, and method are described, and illustrated by apt quotation from the works of active investigators." — *Nature*.





AT THE CARNEGIE INSTITUTION

Science Service



Science Service

AT THE UNIVERSITY OF WISCONSIN

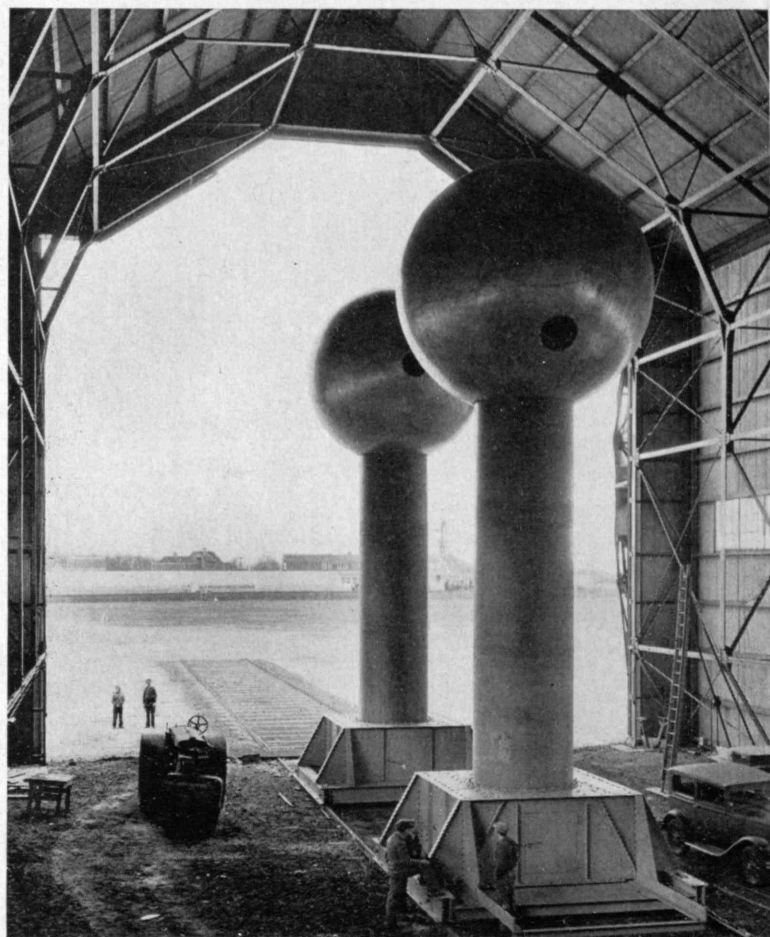
## HEAVY ARTILLERY

... with which Science is waging its steadily intensified attack on the "world buried deep in the void within the atom — a mystery, an anomaly: the massive, dominating, all-powerful nucleus."

To penetrate this arcane fastness and to resolve the anomaly, physicists have invented two major types of bombardment apparatus involving the production of high voltages: the cyclotron of Professor E. O. Lawrence of the University of California and the electrostatic generator of Professor R. J. Van de Graaff of M.I.T. Presented here are samples of both types (cyclotron: Michigan, California; electrostatic generator: Carnegie, M.I.T.).

The Wisconsin atom smasher, which will develop a potential energy of 2,500,000 electron volts, is shown in the picture, discharging a 600,000-volt spark. Michigan's cyclotron, weighing over 95 tons, is the largest of the 26 in this country. At California the original cyclotron shown in the picture is being replaced with a new one that will dwarf all other smashers of the particle-accelerating type. At M.I.T. is the Cyclopean patriarch of the electrostatic generators for which the tube to connect the two spheres is now being completed. The Carnegie Institution in Washington has achieved remarkable results with its variation of the Van de Graaff generator and has announced plans for a larger one.

Newest name for an atom smasher is the chic and delightful rum-batron coined at Stanford University for a variation, now abuilding, of the Lawrence bombardier



AT M.I.T.

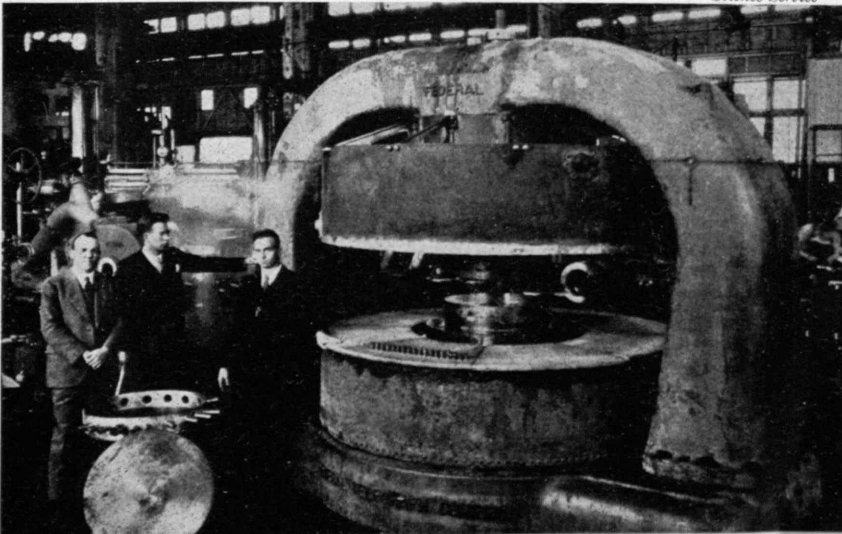
AT THE UNIVERSITY OF MICHIGAN

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# Technics and the Woman

## *A Distaff (and Possibly a Minority) Report on the Age of Science*

BY EVE WITHERS

Illustrated by Henry B. Kane



THE present age has more names than it needs. We are told constantly by this or that informer that it is the Age of Progress, the Age of Enlightenment, the Machine Age, the Age of Science, the Age of Electricity. Once in a while it is hailed as the Age of the Emancipation of Woman. More often, however, propo-

nents of Progress, or Enlightenment, or Freedom, as the proper denominator for a paradoxical period, lug in the emancipation of woman as one of the prime examples of the accuracy of the name to which they are devoted. Many of these contests are disposed of if we decide to call our era the Age of Science; this is one of those conveniently inclusive terms which clear up arguments very nicely. And it is the truest term if we consider the dominant activities of the civilized world during the present and the past three centuries.

Science, in spite of such achievements as those of Madame Curie and a few other women, has, however, necessarily been mainly the concern of man. Lest this essay appear thus early to be but another barrage in the age-old War between Men and Women which Thurber has recently depicted anew in *The New Yorker*, it is well here and now to show that man's monopoly of scientific activity has not resulted from selfishness or deliberate exclusion of woman from the laboratory and the machine shop. In the beginning of the scientific age, when Faustian man was starting the search for exact knowledge, woman, because of lack of education and of opportunity, could not have much to do with the development. The lack of education and opportunity was in large measure voluntary; woman in the pre-scientific age had work to do and a position to fill for which external training was not essential. She was not dissatisfied with the work she had to do. The making of the world a comfortable and satisfying place offered her full scope; man might use his talents for the same purpose, as best suited him. As a consequence, she was for a time debarred or withdrawn from much participation in engineering — the material extreme of science which most obviously affects the greatest number of lives.

The other extreme of science has always been a dominantly masculine concern for a profounder reason.

Philosophically, science is essentially a questioning of bases, of origins — an activity to which the male mind has always been inclined. It is man who spends time and energy speculating on the origin of life; woman doesn't bother so much about it because she has a more intimate knowledge of the subject through experience, or if not through experience, at least through adaptation. Best witness to the truth of this assertion is the pronounced majority of male over female Messiahs in history. Woman by her nature instinctively holds to the *status quo*, especially in matters philosophical, for reasons that will appear. As for her attitude toward lesser matters, the hirsute brag that no woman ever invented a device to lighten her housework finds its answer in the fact that if necessity is the mother of invention, woman did not feel the necessity.

Whether as the result of the romantic urge to worship an ideal, or of the instinct to propitiate something not understood, or of the simple desire to demonstrate his masterfulness, man has spent most of his lifetime in collecting trophies for woman. Many of them please her, tickle her vanity at least, if they do not give her deeper gratification. Others necessarily puzzle her, for they are the things which man gives her, not because he thinks she wants them, but because he wants to give them to her. Like all masculine undertakings, science too has been put to work by man's trophy-collecting urge as another means by which big-hearted Otis may make the little woman happy and in so doing may make himself happy by proving his prowess.

Possibly by a mere accident of time, but probably because of the widening of mind which scientific investigation must bring with it, the beginning of the emancipation of woman, so-called, occurred about as science began to dominate life. Because he had ready to his hand the apparently unlimited fecundity of science as a source of things, devices, techniques, man used science and its results as an important part of the process of emancipation. Especially in its engineering aspects, science has been called upon in a myriad ways to set women free from this, that, and the other kind



... the Origin of Life ...



... woman had work to do ...

of drudgery. The spread of the scientific spirit has been accompanied by the increase of educational training for women. Likewise hygiene and physical welfare have been made self-conscious and thereby often improved. In another department, enfranchisement has been conferred on woman. The business woman, limited as she may be in number and hampered as she may be in a competition for which she was not basically meant, is heralded to be as significant a symptom of the scientific age as is the Zeppelin. Not all of these developments, it is true, are directly attributable to science as represented by the test tube, the laboratory coat, or the slide rule. But the lightening of housework, the apparent easing of physical handicaps, the creation of opportunities for work outside the confines of the kitchen, the dairy, or the schoolroom, and the enlargement of the scope of educational opportunity — for these, woman may and does in the large sense look to science.

To put the case in extreme terms, the file which cuts the manacles from the slave is the benefactor of the slave; science, then, is regarded as the benefactor of woman, not of woman as part of mankind in general, but of woman as a creature separate and distinct from the male who devised science and put it to work in aiding her emancipation from what he saw as bondage. Whether he as man, or mankind as a general thing, or woman as woman, or the conditions of life on this planet imposed the bondage on her doesn't much matter to

him. Man at least thought her state of dependence and inconsequence was bondage from which he should set her free.

In reasoning, as in terminology, however, this case is exclusively masculine. To man, his own state appeared,

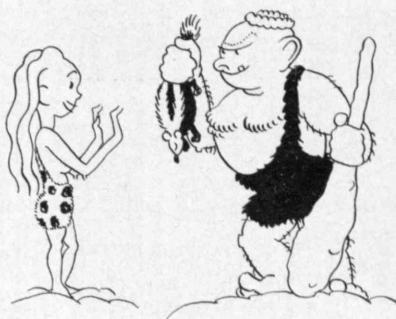


... earth, not velvet ...

conversely, to be one of independence and consequence because he was free of what to him seemed the drudgeries of life. Therefore he reasoned that to take away from woman the work of dependence and inconsequence would emancipate her. Serene in his closed system, he ignored the fact that it was closed, that he would keep it closed to her whether she came to it lugging a broom or pushing a vacuum cleaner. Since man controls science and has used it to implement his fallacy science has not been a benefactor of woman, in the large sense; rather, it is a means reducing her to a futility worse because it appears so useful. This is a serious accusation; to support it, we must look beyond the immediate appearance of the case. It is perhaps an unfortunate thing for science that any attempt to appraise it and its effect on any institution easily becomes wrapped up in the more obvious and more numerous impacts of engineering on life, and consequently slights or even ignores the

much more powerful and permanent effects of science philosophically.

Equipped with a vacuum cleaner which weighs more than a sledge hammer, the little woman remains at home with her telephone to call the chain store for jiffy



... collecting trophies for women

desserts; with that supersalesman, the radio, to advise her on doubtful cures for all ills; and with the rest of the button-pushing paraphernalia of her brave new world, a new world which is to her, for all its virtues, a contradictory one; for woman cannot agree that, were efficiency ever entirely possible or always entirely pleasant in a home, science has lived up to the claims made for it. For example: An electric dishwasher is to a woman only another means of doing the same old task. It may free her from the kitchen for a longer part of the day, but it cannot collect the dishes, scrape them, rinse them, stack them, or return them to the pantry shelves — all, in fact, that it does, is to give her a machine to manipulate and make her kitchen look less like a comfortable room and more like a unit in a factory or hospital. Call it feminine perversity if you will (a more likely explanation is the fact that most women have a blind spot mechanically), but so it is with woman in regard to the machines which she is urged to accept as more efficient substitutes for her own two hands and her ingenuity. The household drudgery from which she is supposed to be set free is essentially the day-after-day repetition of tasks which are in themselves pointless because they are never completed or because they are automatic and give no opportunity for creative thought or activity. The installation of a machine which is touted as the thing that will do the task is but a disillusionment to her when she finds not only that it will not do the task completely, but that it forces on her merely another kind of pointless routine, or that it does only the part of the task which was in no way objectionable to her. Man, whose efficiency is measured by the number of people who jump when he pushes a button, finds it hard to understand why woman should be dissatisfied with the button-pushing opportunities which science has given her. He does not remember that when she has pushed the button, she must run around and do the jumping.

The mechanical contrivances which science has given woman cannot, however, be generally condemned; on the grounds of efficiency as doers of work they must be admitted to be improvement and advance over the past. Obviously, it is better and easier to draw fairly pure water from a faucet than to carry it in buckets from a possibly polluted well. Man and science are in a tenable position when they argue that woman is better (Continued on page 128)



... adding machine for washboard



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# THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

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## *Fellowships*

FOUR fellowships named in honor of the late Dr. Arthur D. Little, '85, long a member of the Corporation and one of the Institute's most distinguished Alumni, have been established in the Graduate School. Two of these honors will be known as the Arthur D. Little Postdoctorate Fellowships and will carry stipends of \$1,500 each, with facilities for research in the Institute's laboratories. The other two fellowships, designated as the Arthur D. Little Fellowships, are open to graduate students pursuing studies for the doctor's degree in chemistry or chemical engineering. They carry stipends of \$1,000.

Announcement of the new fellowships was made on December 15 by Dr. Harry M. Goodwin, '90, Dean of the Graduate School, at the dedication of the recently established industrial museum in the Arthur D. Little laboratories on the occasion of the fiftieth anniversary of this widely known research organization. The fellowships constitute two of the four types of scholarship aid described in President Compton's plans for expansion.

## *Key to a Gelid World*

SCIENTISTS have long known that the ability of magnetic fields to change or distort matter, thus altering its properties in a great variety of ways, held exciting possibilities for exploring new frontiers in the world of matter. For such fundamental research magnetic fields of great strength are necessary and the quest for methods of producing them has been carried on intensively for many years. Until recently, however, the types of apparatus available met the demands only partially, either because the intensity of the desired fields was obtained for only a fraction of a second, or because, as in the case of the iron-core magnet, the fields covered too small a volume for practical applications.

In the light of all the effort that has been devoted to this study, it is therefore especially significant that a magnet capable of producing a field of great intensity and long duration has been developed at the Institute. The new magnet, a pygmy in comparison with others less powerful, produces a field approximately 150,000 times stronger than that of the earth. The Institute's magnet was designed to produce fields of at least 100,000 gauss, the highest permanent field ever attained, and in preliminary tests under the direction of its designer, Dr. Francis Bitter of the Department of Mining and Metallurgy, a field of 75,000 gauss was produced. The enormous amount of power required to produce this field was made available to Dr. Bitter through the cooperation of the Edison Electric Illuminating Company of Boston, which placed at his disposal laboratory space in one of its large substations. Here, with controlled, direct cur-

rent up to 12,000 amperes at 250 volts to draw upon, the first test was successfully carried out with a maximum current of 8,000 amperes, producing a field of 75,000 gauss.

The copper coil of this unique magnet, which is only six inches in diameter with an inside diameter of one inch, is inclosed in a bronze shell. A water-cooling system is employed to dissipate the enormous heat generated when an amount of power sufficient to supply a small town, or more energy than is needed to operate 50 automobiles of 80 horse power, is poured into this amazingly small piece of apparatus. Without water cooling the magnet would melt within one second. Because of the very heavy power load and the strength of the magnetic field, precautions were taken to protect the research staff and the electrical machinery. The two huge bus bars carrying the current to the magnet each consisted of six strips of copper, six inches wide and a quarter of an inch thick, bolted together.

Having decided upon the design, Dr. Bitter built a small experimental magnet consisting of a copper coil two inches in diameter and one inch thick, embedded in a block of low-carbon steel. Operating with 25 kilowatts, this little magnet produced a field of 35,000 gauss over one cubic centimeter. The experience gained from the experimental model led to the construction of the 100,000-gauss magnet, and a still more powerful model capable of producing an intense field over a much larger volume is now in process of design. Dr. Bitter's experiments were made possible by grants from the Penrose Fund of the American Philosophical Society and from the Joseph Henry Fund of the National Academy of Sciences.

The stimuli for the present investigation in magnet design are of two kinds: First of all, it is desired to explore new regions quite without any possible prediction as to what lies in store. A magnetic field distorts or changes matter and, therefore, also its properties. With the new magnets it is now possible to produce greater changes than with older models and at the same time vary the conditions of the experiment, such as temperature and pressure, and still have ample room and time for accurately observing the changes that take place. Previous experiments have shown that at low temperatures magnetic fields can make certain salts as magnetic as nickel, and that certain metals which normally are good conductors of electricity can be made relatively nonconducting. The whole range of existing substances, from pure gases, through liquids, solids, compounds, solutions, alloys, organic, and biological matter is available for experimentation. The value of the results obtained will probably not be in the form of new useful forms of matter or new means of controlling chemical and physical changes, although such results are conceivable, but rather in revealing inadequacies in the present theories and in pointing the way to more correct thinking.



The second stimulus for the present investigation in magnet design is to make a generally useful laboratory tool and to fill specific needs in a variety of investigations already under way. For example, the very interesting range of temperatures below one degree absolute can be reached by means of a magnetic cooling cycle, and the new magnets should be well suited for such work. Dr. Bitter will collaborate with Dr. Frederick G. Keyes, Head of the Department of Chemistry, next spring in a program of low-temperature research by means of the intense magnetic fields now available in the new type magnet. This apparatus is expected to be used also for accurate measurement of the Zeeman effect, which is the splitting up of the spectral lines by a magnetic field for the study of atomic structure. The magnetic method may also be employed for the study of very fast-moving atomic particles.

The fascination of exploring the inconceivably cold and mysterious world of matter in the neighborhood of absolute zero lies in the fact that rapid and strange changes occur when matter is subjected to extremely low temperatures. Absolute zero, which corresponds to 459.69 degrees below zero F., is the point at which scientists believe heat ceases to exist in matter, where molecular motion is reduced to a minimum. In this region every minute step down the scale of temperature is of enormous significance. A fraction of a degree may conceivably change matter from one state to another as heat is withdrawn.

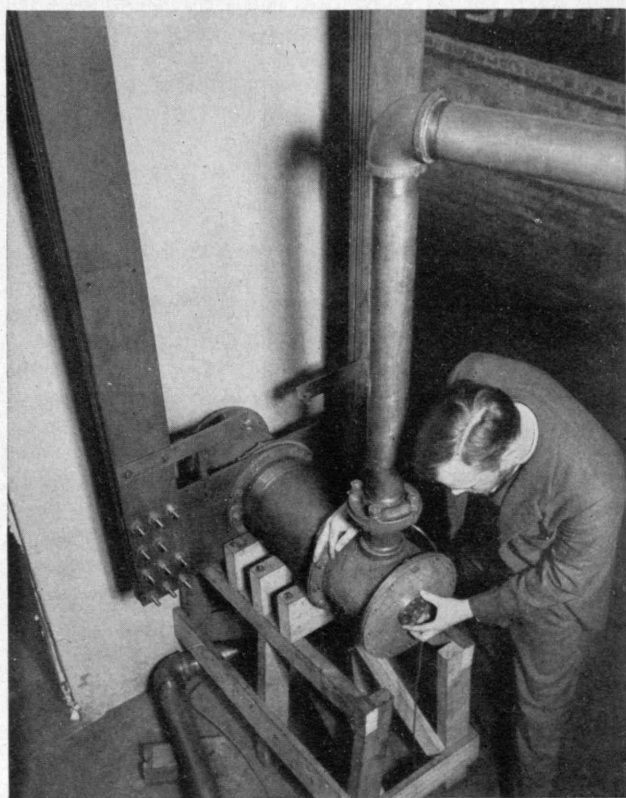
The search for new knowledge in the field of low-

temperature research is made possible because certain complex salts, such as ammonium chromium alum, can be made to give up heat under the influence of a magnetic field. To accomplish this, most of the heat in the salt would first be absorbed while in an intense magnetic field by boiling liquid helium, a method which makes it possible to reduce the temperature to 2.34 degrees F. above absolute zero. The next step is to shut off the field, protecting the material from heat influx. The temperature is thus still further reduced to the region of approximately 0.2 degrees above  $-459.69$ .

The electrical conductivity of metals and even some nonmetallic substances becomes limitless under the influence of extremely low temperatures, which means that under ideal conditions it is conceivable that an electric current, once started, would continue to flow undiminished for all time. A similar effect is manifest in the heat-conducting properties of substances. Thus the wholly different and astonishing world of physical properties revealed in future low-temperature research may profoundly affect the existing theories of the structure of matter.

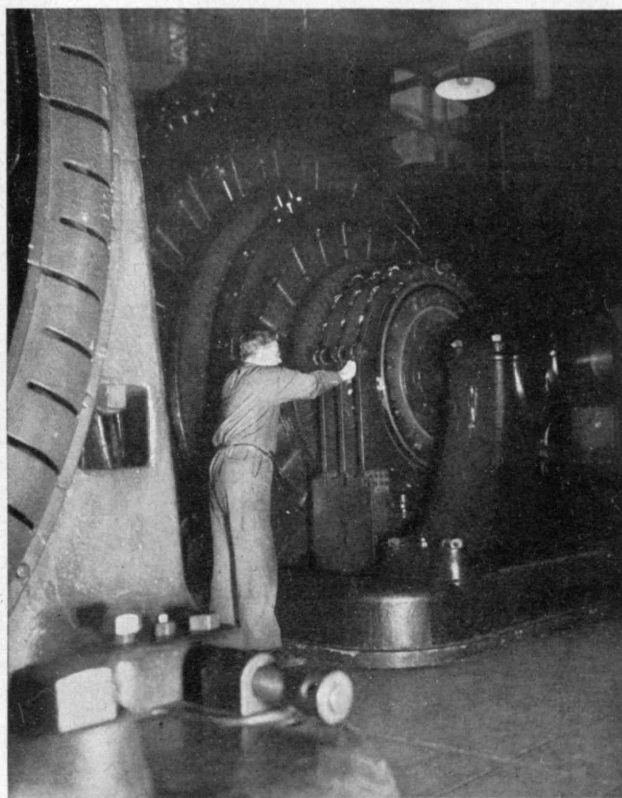
### Step by Step

THE technique of the industrial designer, revealing the various stages in the design of a wide variety of familiar products, is graphically represented in a unique exhibit in the Institute's School of Architecture. This interesting exhibition, which will continue until January



THIS SMALL MAGNET SWALLOWS THE OUTPUT

The left illustration shows Dr. Bitter and the new magnet, behemoth in power though a pigmy in size, designed by him to produce a field of at least 100,000 gauss. For what it does, how it excels, what it may do, see adjacent story



... OF TWO GENERATORS LIKE THIS

9, shows the various steps, from rough sketches to finished drawings, of such products as electric fans, clocks, automobile parts, fabrics, bottles, and furniture. The aim of the exhibition is to indicate how the designer works and to show the nature of his contributions which, with efforts of executives, technicians, salesmen, and many other people in the background, form the development of familiar products.

Behind each product when it finally is offered to the public is a long biography becoming, through technological progress, more complex as it advances from stage to stage. Industrial design forms an increasingly important phase of this complexity, and the exhibition represents only a few of the more important high lights in the biographies of a number of products. It offers, in addition, some interesting biographical information on the designers themselves, because each has selected material to show how he worked out a particular problem. The work in each case was chosen because it represented some interesting point or points in technique rather than because of the importance of the product itself. Brought out clearly in the exhibit is the process by which a designer changes his own artistic conception of the finished product in order to adapt it to the demands of the consumer and of quantity production.

Many of the exhibits show the working steps in the process of design, including original rough sketches, blue prints, drawings at various stages of development, survey material, variety in results, and, in some cases, the marketing methods. The number and variety of technological processes involved in the planning of industrial products, from bottles to automobiles, are represented and indicate the wide range of interest which the showing offers, particularly to manufacturers.

Theodor Carl Müller, '26, lecturer on design of manufactured products at Technology, has assembled for the exhibit the work of a number of the foremost men in the field of industrial design, a phase of manufacture which involves the design or redesign of more than 8,000 products annually. Among the prominent industrial designers who have sent samples of their work are De Vaultier and Blow, exhibiting clock designing; Georges Wilmet, perfume bottles; Virginia Hamill, textiles; Robert Heller, electrical equipment; Belle Kogan, silver; Ben Nash, packaging and radios; Gilbert Rohde, furniture; Morris Sanders, bottles; Roy Sheldon, designs for use of new low-cost moulding material; Walter Dorwin Teague, automobile parts; Sidney Waugh, '27, glassware; Russel Wright, radios. Other exhibitors include Egmont Arens, Norman Bel Geddes, Lurelle Guild, Egbert Jacobson, Gustav Jensen, Raymond Loewy, Alfred L. Mell, George Switzer, John Vassos, and Walter Von Nessen.

### *To Nine Unknowns*

TO the Institute's distinguished achievements in the development of mechanical calculating machines for the solution of mathematical problems in science and engineering is now added the simultaneous calculator. The new machine, designed and built in the Department of Civil and Sanitary Engineering by Professor John B. Wilbur, '26, is capable of solving nine simultaneous

linear algebraic equations. During the three years in which the new machine has been under development, Professor Wilbur has had the close coöperation of Dr. Vannevar Bush, '16, Dean of Engineering, whose own contributions in the field of mechanical solutions of mathematical problems, including the differential analyzer, have received wide recognition.

Equations of the type solved by the new machine constantly occur in engineering and scientific analyses covering a wide range of fields. Designed originally for the solution of problems in civil engineering, such as the complex calculations that arise in the design of skyscrapers, the calculator promises to be useful in such diverse fields as nuclear physics, geodetic surveying, genetics, and psychology. For the mathematician it is a new tool for the evaluation of determinants. Once the coefficients and constants of the particular equations to be solved are set up on the new calculator, a single movement of the mechanism accomplishes mechanically in a few seconds mathematical processes which might take days if carried out by the usual methods of calculation.

The simultaneous calculator, which weighs 2,000 pounds and has more than 13,000 separate parts, including 600 feet of flexible steel tape and nearly a thousand ball-bearing pulleys, is the outgrowth of an experimental laboratory model built by Dr. Wilbur in 1934. The new machine has undergone exhaustive tests and is now in active operation. Construction of the simultaneous calculator was made possible by a fund established by Sir Douglas Alexander of New York. Built for the direct solution of nine simultaneous equations involving nine unknowns, the machine may be operated to solve equations containing even a larger number of unknowns. Accuracy of results to any degree required may be obtained by successive solutions, each one yielding greater accuracy than its predecessor.

### *New Funds*

GIFTS to the Institute amounting to more than \$23,000 were announced by President Compton at the meeting of the Alumni Council on November 30.

Securities of a value of \$10,000 have been presented to the Institute by Godfrey L. Cabot, '81, for aeronautical engineering and general purposes. Part of the gift is expected to be devoted to the fund for construction of a new wind tunnel of unique design. Dr. Compton stated that in addition to Mr. Cabot's gift, a substantial sum has been pledged toward the construction of the wind tunnel. The donor is president of G. L. Cabot, Inc., and has long been active in the advancement of aviation.

An anonymous gift of \$10,000, to be known as the Bess Bigelow Fund, was also announced. The fund will be used for scholarships, research, and other educational purposes at the discretion of the Corporation.

The family of the late Henry A. Morss, '93, who, as a life member of the Corporation, was active in its affairs for many years until his death last May, has presented a gift of \$3,500 to be used for the Institute's undergraduate sailing activities. Mr. Morss, much interested in yachting, was a member of the original committee which had charge of the design of the Technology dinghies.



Kenneth Roberts, the author, has presented to the English Department a valuable collection of material gathered during the writing of "Arundel," his novel on Benedict Arnold's march on Quebec. The collection includes the original manuscript of "Arundel" with the author's working notes, correspondence, various books, including the histories of several Maine towns, and a copy of the first edition of the novel, which appeared later in a revised form. In the collection also are several maps, among them being one of the Lake Megantic region of Quebec, photostatic copies of Benedict Arnold's letters, and the original drawings of the end papers for the novel.

### Cosmography

**D**R. HARLAN TRUE STETSON, astronomer and physicist, has been appointed a research associate on cosmic terrestrial relationships at the Institute. With special facilities at his disposal at Technology, Dr. Stetson will continue an important program of cosmic terrestrial research which has already led into the fields of geophysics, the physics of the atmosphere, and the field of radio communication. He is particularly interested in the earth's crust, an investigation which involves studies of small variations in latitude and longitude.

Dr. Stetson is a native of Massachusetts and a graduate of Brown University, Dartmouth College, and the University of Chicago. From 1911 to 1913 he was an instructor in physics at Dartmouth College, where he began a series of experiments which resulted in the development of the first thermoelectric photometer for determining the stellar magnitudes from photographic plates. In 1913 Dr. Stetson joined the staff of Northwestern University as an observer at the Dearborn Observatory and instructor in astronomy. His graduate work leading to the degree of doctor of philosophy was carried on at the University of Chicago and in the autumn of 1916 he was appointed instructor in astronomy at Harvard University and Radcliffe College. His appointment as assistant professor of astronomy at Harvard came in 1920, a position which he held until he accepted the post of director of the Perkins Observatory and professor of astronomy at Ohio Wesleyan University.

Dr. Stetson is a fellow of the American Academy of Arts and Sciences, the Royal Astronomical Society, the American Association for the Advancement of Science, and many other scientific societies in this country and abroad. He is the author of several books on astronomy and has contributed numerous technical papers to the scientific journals.

### United Research

**T**HE rewards of coöperation in research in the field of metals through joint investigation of fundamental problems by physicists, metallurgists, and chemists will be discussed by leaders in these fields at a meeting to be held at the Institute on January 28 and 29 under the auspices of Technology and the American Institute of Physics.



M. I. T. Photo

#### ENGINEER'S DELIGHT

*... Is this machine designed by Dr. Willbur—who sits beside it—for solving up to nine simultaneous equations. See full details on opposite page*

The forthcoming meeting emphasizes the promising trend toward a most productive type of research in which technical workers bring to problems of fundamental interest the specialized knowledge and methods of their several fields. The very important results of joint research are nowhere more evident than at the Institute itself, where many investigations are brought to successful conclusions through interdepartmental coöperation.

The purpose of the meeting is to discuss thoroughly recent developments in the physics and chemistry of metals, as well as the opportunities for still greater advances through the combined coöperative effort of all workers whose knowledge may in some way contribute to problems of mutual interest. From a half to one hour each will be allowed for presentation of the important papers, and ample time will be given for discussion, thus permitting an interplay of viewpoints not possible in the usual scientific meeting.

Some of the more general papers to be presented are: "Research Problems in the Steel Industry," by Dr. E. C. Bain, United States Steel Corporation; "Inclusions in Ferrous Alloys," by Dr. A. B. Kinzel, '21, Union Carbide and Carbon Corporation; "Flow Phenomena in Heavily Stressed Metals," by Professor P. W. Bridgman of Harvard; "Electronic Structures in Metals and Alloys," by Professor J. C. Slater, Head of the Institute's Department of Physics; "Corrosion," by Dr. J. R. Burns of the Bell Laboratories; "Elastic Properties of Ferrous Alloys," by Professor A. V. de Forest, '11, of Technology; and "Chromium-Nickel-Iron Alloys," to



be discussed by Dr. V. N. Krivobok of the Allegheny Steel Company. In another group of papers various techniques and their applicability are to be presented, while in the third group some especially complex scientific problems met with in ferrous alloys will be discussed.

Arrangements for the meeting are in charge of Professor John C. G. Wulff of Technology, who will act as secretary, and Dr. Harry A. Barton, Director of the American Institute of Physics.

### *Accredited Curricula*

ALL of the Institute's engineering departments and courses have been accredited by the Engineers' Council for Professional Development in a survey of undergraduate engineering curricula in educational institutions of New England and the Middle States which has recently been completed. The Engineers' Council for Professional Development is a conference of engineering societies organized to enhance the professional value of the engineer through the cooperative support of national organizations directly representing the professional, technical, educational, and legislative phases of the engineer's life. The participating societies in this significant undertaking are the American Society of Civil Engineers, American Institute of Mining and Metallurgical Engineers, the American Society of Mechanical Engineers, American Institute of Electrical Engineers, American Institute of Chemical Engineers, the Society for the Promotion of Engineering Education, and the National Council of State Boards of Engineering Examiners.

Only curricula in institutions making application to the Council were considered, and the names of various institutions will be added to the Council's list of accredited curricula from time to time. The Council's committee on engineering schools, of which President Compton is chairman, made the study of the institutions in New England and the Middle States, and a survey of curricula of institutions in other parts of the country will be undertaken during the coming year. In compiling its list of accredited engineering curricula, the Council considered every curriculum separately and based its decision on the reports made by a number of groups of engineers and educators who visited the various institutions. Only undergraduate curricula leading to degrees were considered.

Technology's engineering departments and courses accredited by the Council are Aeronautical Engineering, Architectural Engineering, Business and Engineering Administration, Chemical Engineering, Civil Engineering, Electrical Engineering, Electrochemical Engineering, General Science, Mechanical Engineering, Metallurgy, Mining Engineering, Naval Architecture and Marine Engineering, and Sanitary Engineering.

### *Alumni Council Meeting*

A WARM greeting to its guest of the evening, Dr. William D. Coolidge, '96, marked the Council's 190th meeting on November 30, as did President Compton's announcement of gifts (see page 118). In the

line of business there were two important progress reports, that of John E. Burchard, '23, on the Friends of the Library and that of Raymond S. Stevens, '17, on the comparative merits of a new gymnasium or an enlargement of Walker Memorial in the proposed program for student welfare. From designs prepared by Dr. Harlow Shapley and his Corporation Committee and by Mr. Burchard and his Alumni Committee, the Friends of the Library has its foundation laid and its framing well under way. A special article is planned for an early issue of *The Review* to detail these plans.

Mr. Stevens remarked that the solution of the problem tackled by his committee seemed perfectly obvious — with no one agreeing as to what *obvious* is. He then gave examples of the many reports and briefs that he had received from special groups, all desiring additional space either in an athletic building, an auditorium, or Walker Memorial. It is the duty of this committee to sit in judgment on the appeals of these special interests and render a decision as to what is beneficial to the greatest number of students.

It was regrettable that the Council, as a deliberative body, sat tongue-tied and in discouraging silence when President Robbins, '07, called for discussion of Mr. Stevens' report. The Council seems to have lost the desire to talk; it only wishes to be talked at. Despite a really distinguished history of vigorous and profitable debate, the Council has now become forensically obese and deliberatively mute, leaving its work to committees who do it, we hasten to interject, extremely well, even when they come to the Council for aid and receive, not the bread of discussion, but the stone of silence.

Sixty-five members and guests were present.

### *Visiting Committee Report*

IN condensed form, we present below the most recent report to the Institute Corporation of the Visiting Committee of the Department of Biology and Public Health.

#### **BIOLOGY AND PUBLIC HEALTH\***

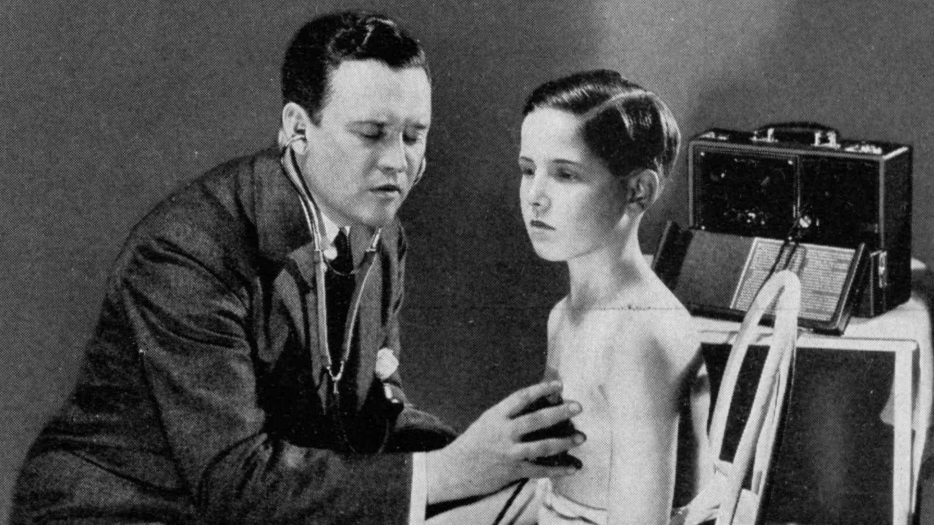
At the Committee's last meeting, Professor Samuel C. Prescott, '94, at the request of the Chairman, outlined the purposes and content of the three options of undergraduate study in the Department, namely: (1) biology and public health, (2) industrial biology, and (3) public health engineering. A discussion of the three programs followed, in which the studies were considered with reference to professional fundamentals and also with reference to those broader and more cultural aspects which are considered under the term general studies.

The Committee was of the opinion that the professional work was of high grade and of broad scope and should not be weakened in any respect. At the same time the desirability of the general subjects of social, economic, and literary character was recognized. It

*(Continued on page 124)*

\* The members of this Committee for 1935-1936 were: Victor M. Cutter, Chairman, Henry E. Worcester, '97, Donald G. Robbins, '07, Charles E. Smith, '00, Harrison P. Eddy, Jr., '17, Lewis W. Waters, '10, Henry Vaughan, and Fred C. Blanck.

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## HEALTH HAZARDS IN INDUSTRY

(Continued from page 110)

use of a simple gauze respirator over the mouth and nose will eliminate all difficulty. The mask must be efficient to resist passage of the particular dust, of course.

The foregoing conditions will serve as examples of industrial diseases which consist simply in overuse of the protective mechanism of the body. Although the conditions may be very disabling, they are superficial, consisting in a breakdown of some part of a local protective surface. In contrast, a few general effects can be mentioned, which follow physical phenomena or absorption of substances.

Excessive heat is followed by the common industrial diseases of heat cramps, heat exhaustion, heat stroke, and so on. These conditions are general effects and are due directly to the changes in body metabolism following excessive perspiration. Water loss of perspiration is replaced by the drinking of ordinary water. This fluid, however, contains an insignificant amount of common salt, while perspiration contains from one-tenth per cent to two per cent of salt. The new, uninitiated workman, unused to hot work, has perspiration with the higher salt content. Obviously a salt deficit is possible by virtue of the absolute loss of salt in the perspiration; practically speaking, there are no reserves of salt in the body, and it is necessary to take in a few grams of salt each day to replace that normally lost. An unusual drain on the salt of the body, as in excessive perspiring, will obviously threaten the correct percentage of salt in the body fluids. A very small drop is accompanied by the signs of heat exhaustion or heat cramps. The immediate cure is the administration of salt to restore the normal concentrations. Prevention of these heat effects is accomplished through the administration of salt in the drinking water (two-tenths per cent — not detectable to taste), giving salt in tablet form, and a salt-adequate diet (equivalent to two quarts of milk daily).

Many other physical phenomena have definite effects on health. Considering radiant energy, the eyes are of primary concern. Metallic and carbon electric arcs are sources of much ultraviolet radiation of wavelengths of  $295\mu$  and less, from which the eyes must be protected. If a burn occurs, painful symptoms are apparent several hours after exposure. Excessive cold, another physical phenomenon, is endured better by the body than excessive heat. With adequate clothing, any low temperature can be survived. Excessive dryness or the opposite, high humidity, are factors which have much to do with comfort of individuals. The actual presence or absence of moisture in the air is probably of doubtful health importance except that high humidity means damp, cold, and wet working conditions. Such exposure is conducive to frequent respiratory infections.

Inorganic materials when breathed into the lungs are the cause of pneumokonioses. All large particles, as are found in Nature's dust storms and so on, are easily trapped and eliminated from the air before they reach the deepest part of the lungs. However, in mining work after the use of explosives and in grinding, dust particles exist 10 microns or less in diameter. Such small masses,

of course, float easily into the depth of the lungs. The particles, due to their smallness, are able to reach the vulnerable absorbing surface of the lungs. If the substance is harmful, it has a chance to be effective. Fortunately, however, many of our dusts are quite inert physiologically. The carbonates, phosphates, and so on, are water soluble and are easily eliminated from the lungs by the blood route. If these soluble dusts are specific poisons, such as lead, a general poisoning, of course, can result, due to their very quality of solubility.

A few dusts in industry have particular interest. The carbonaceous materials are not water soluble and remain stored in the lungs indefinitely without any effect apparently on the health of the individual. This condition, however, has a name and is called anthracosis. Dusts of asbestos — a complicated silicate — form plugs in the lung passages and, if not coughed up, can cause serious lung disease. This is asbestosis. The inhalation of iron oxide is apparently quite innocuous, but the condition is termed siderosis.

A dust in industry that is definitely related to health is crystalline silicon. It causes silicosis of the lungs, a disease that is attracting widespread interest at the present time. Silicon dioxide (common sand or quartz) is harmless as long as it is trapped in the nose and upper respiratory tracts. Particles of silicon must be so small that they pass into the true lung tissue (*i.e.*, less than 10 microns in diameter) before they are effective. A great deal of such silicon dust, however, does exist in industry. The dusts around the pneumatic drill of the miner, of sand blasting, of sandstone grinding, and so on, contain quartz in particles of about 10 microns in diameter. These are small enough to pass easily into the lungs. The respiratory defense of hairs and sticky surfaces cannot engage such particles.

It usually takes years of exposure to produce the pulmonary lesions of silicosis. The result is to cause the lungs to lose much of their effective respiratory surface due to fibrosis whereby the breath becomes shortened and a variety of secondary changes follow. The entire disease is related to the subject of tuberculosis and in the final stages it is practically indistinguishable from it. In fact it is generally thought to be tuberculosis grafted on the original silicosis.

There is a final type of environment in industry which affects the health of man. This environment is air chemically contaminated by gases or fumes which pass as readily into the body as air itself. Obviously the body is powerless to prevent absorption. Some of these gases have no odor or unpleasant acute sensation associated with their absorption. They pass directly into the blood stream. The respiratory membranes in the lungs are simply tissues which allow the free interchange of gases between blood and air. The passage is governed by partial pressure phenomenon. Carbon monoxide is an example of a gas which is extremely poisonous and yet is absorbed readily. Hydrogen sulphide, in strength so great that its odor is not unpleasant, is another. Hydrocyanic acid and benzol are both absorbed readily. The differences among the poisons come in their action after absorption. Carbon monoxide so affects the blood that it loses its oxygen-carrying capacity. In a normal in-

dividual, unconsciousness from asphyxia results when somewhat less than half of the blood hemoglobin is in combination with carbon monoxide. Death will ensue rapidly if the carbon monoxide concentration continues to increase in the blood. Recovery is likewise rapid if oxygen and artificial respiration are applied. The carbon monoxide leaves the body apparently without permanent after effects except in rare cases where deep coma existed.

Carbon monoxide poisoning acts in much the same way as an atmosphere which is low in oxygen, and our knowledge of this poisoning gives us insight into the new field of aeronautical medicine. At the higher altitudes the lack of oxygen is probably the most important factor. A normal individual can usually go to 15,000 feet without being seriously affected by the lower oxygen content of the air. It is possible to forecast the reactions of persons to low oxygen atmospheres as they resemble the reactions to carbon monoxide gas. Persons with heart disease, lung disease, or anemia are particularly affected by carbon monoxide. The same people would first notice the effect of low oxygen partial pressure. The early symptoms of carbon monoxide poisoning are giddiness, shortness of breath, faintness, weakness of the lower extremities, and pounding of the heart. These are precisely the symptoms of high altitude or mountain sickness.

It is obvious that the many kinds of environment present in the modern factory demonstrate the great adaptability of the human body to resist damage, but it is equally obvious that there are many industrial environments which overstrain the protective power of the body. It is to be hoped that working conditions can be improved to a point where the strain on the physiological adaptability can be entirely removed. With new materials and processes constantly being introduced, a great deal of attention is necessary to accomplish this program. Extensive laboratory facilities, specifically designed for the study of toxicology and pathology are necessary; physicians must be available to detect the signs and symptoms of disease; and engineers with a knowledge of industrial hygiene must be present to redesign operations or to construct ventilating devices to clear the environment of noxious fumes and gases. In large companies enough problems arise to maintain a complete laboratory, such as the Haskell Laboratory of Industrial Toxicology of the DuPont Company of Wilmington, Del. In addition, departments of industrial hygiene are maintained in a number of our universities in connection with medical schools and schools of public health. Insurance companies, too, are recognizing the value of undertaking intelligent research in this field of industrial environment. The United States Public Health Service maintains a division devoted to industrial health problems which is at the service of the public. Various states also have departments similar to this organization. The field of industrial hygiene is attracting much attention at the present time and consequently more state departments are being organized or enlarged each year. All of these organizations are contributing to the problem of improving industrial environment in order to eliminate all factors detrimental to health.



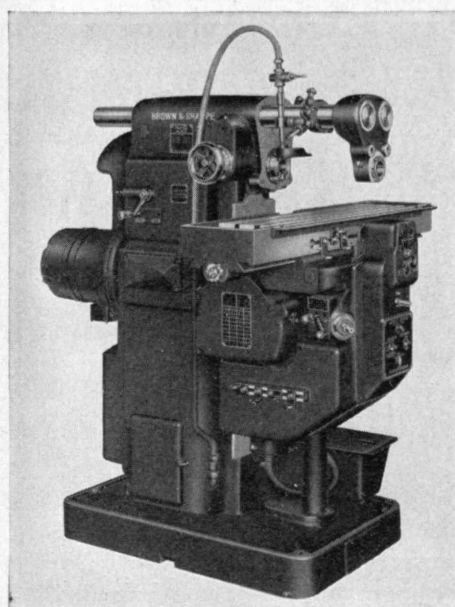
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## INSTITUTE GAZETTE

(Continued from page 120)

was the viewpoint of the Committee, however, that these should not be greatly extended, especially if to do so would be at the expense of the professional training, but that every effort should be made to stimulate interest in cultural and social studies by showing the relation of the professional work of the Department to the public at large and by opening up viewpoints of the biological relationships to society.

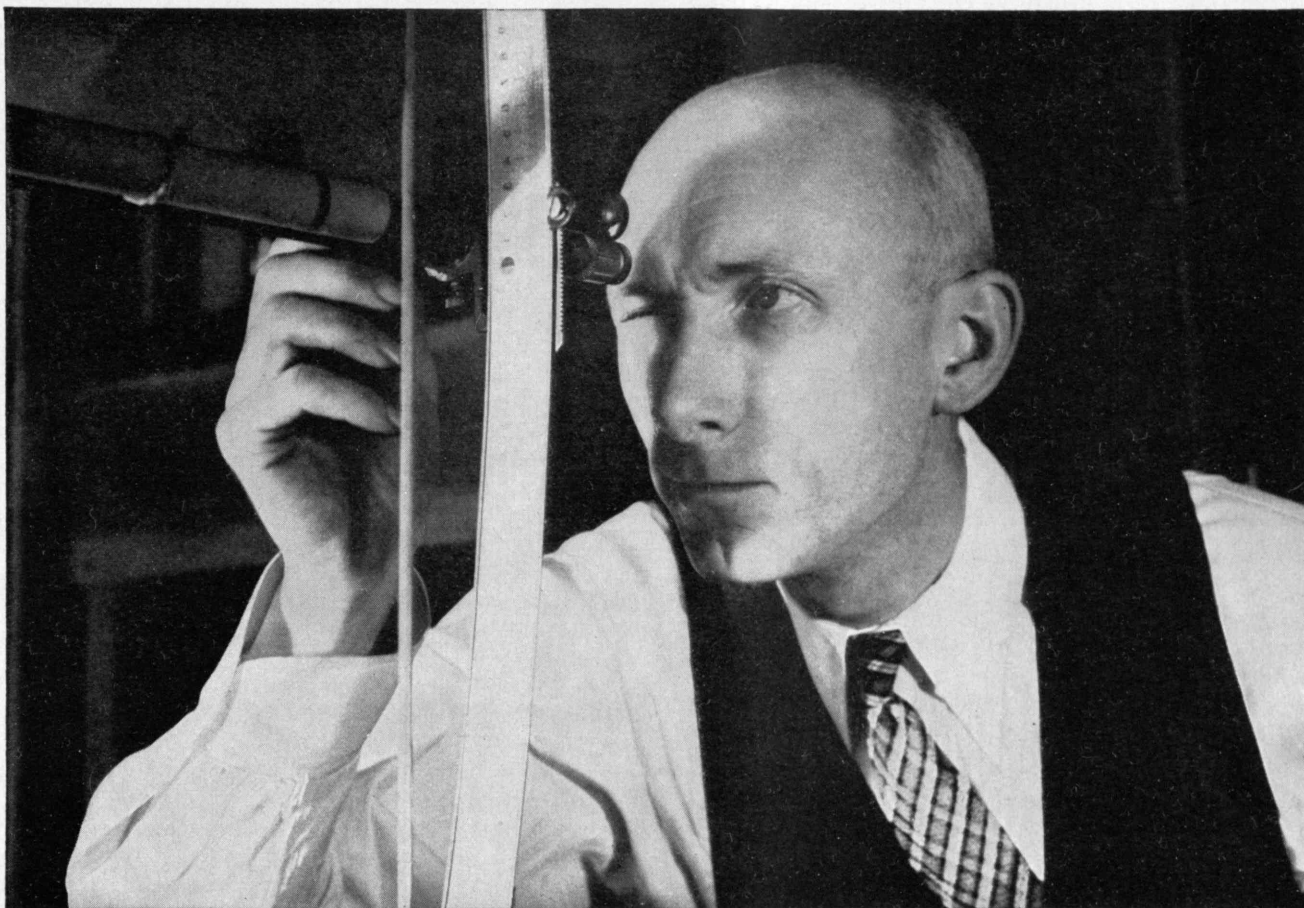
At the conclusion of the general discussion the work of the three options was referred to those members of the Committee best prepared by their business activities to comment on the work in each special field. Dr. Vaughan particularly commended Option 1 as providing a broad training for men who might enter the field of public health administration or the study of medicine. He stated that the men who had gone from this Course to the Detroit Department of Health [of which he is commissioner] had been well trained and fitted quickly and effectively into the organization, carrying out the work assigned to them with intelligence, coöperation, and zeal.

Mr. Waters expressed his satisfaction with the training in the field of food technology and industrial biology. He also spoke from personal knowledge since men from this option had entered the employ of General Foods Corporation and had successfully met the requirements imposed upon them.

Mr. Eddy commented specially on Option 3 and expressed the opinion that this breadth of training gave to the men viewpoints and knowledge which they would find directly applicable in state or Federal work as public health engineers. These broad conceptions of the biological aspects of sanitary problems are of the type desired in the partners in the organization which he represents, although the tendency was, for the most part, to take men of civil engineering training or mechanical engineering training for the new assistants coming to their staff directly from the Institute or from other technical schools.

Attention was directed to the various trends of thought, as recently expressed in professional groups, in regard to the most effective preparation for administrative work in public health. Extended discussion led to the conclusion that personality, capacity, and soundness of fundamental training in public health and science are the essentials, rather than the possession of a particular type of degree.

It is certainly clear that from the rise of sanitary science, more than 40 years ago, to the present time, the influence of this Department in public health in America has been a large and effective one. The Committee believes it will continue to occupy a leading place so long as the traditional standards of training are maintained. The programs of study at the Massachusetts Institute of Technology are unique and have been worked out with great care, after much discussion with leaders in actual administrative practice and with close attention to the trends of public health affairs and industrial life. The Committee therefore seemed unanimous in the assumption that (Concluded on page 126)



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## INSTITUTE GAZETTE

(Concluded from page 124)

the courses as now arranged provide adequate fundamentals for work in the fields which the men in the respective options might look forward to as life careers.

The graduate courses offered are closely coordinated with the research activities of the Department. In the consideration of the graduate courses Dr. John W. M. Bunker, Chairman of the Departmental Committee on Graduate Work, described clearly the fundamental, critical, and exact researches which are now under way under his direction and under the direction of the various staff members. It was brought out that the graduate studies are designed not merely to broaden the student's fundamental, factual knowledge, or to call his attention to specialized fields of application, but to develop his critical faculties and his judgment and appreciation of exact measurement. The Committee was impressed with the splendid progress of research work conducted by Dr. Bunker and his associates and was definite in its belief that this research must be continued.


The Committee appreciated the splendid work which has been done by Professor Clair E. Turner, '17, in developing public health education. This has brought great credit to the Institute and has been not only national but international in its scope. He has returned from a leave of absence devoted to lecturing and studying health education conditions in Europe, India, the Philippines, East Indies, China, and Japan. In the Asiatic countries, persons trained in the Department are in charge of health education programs, and the influence of the Department has been particularly noteworthy in this field of endeavor.

The discussion with reference to the number of graduate students who could be properly trained in the Department elicited the fact that a careful survey recently made indicated that with the present staff, space, and equipment, about 12 graduate students working for the master's degree or the Ph.D. degree could be properly cared for. The number at the present time is 11. With more ample space and some increase in equipment but the same staff, about 20 would be the limit which could be well handled by the Department, but with enlargement of the staff this number could be considerably increased. At the present time practically all those receiving degrees are located without serious delay in good professional positions. Under normal conditions more men could be placed than are available. In addition to the above graduate students, it is possible to prepare adequately at least six students for the Certificate in Public Health.

Attention was directed to the great service which has been rendered by the Rockefeller Fund in aid of research. The need for more space for the development of the Department was stressed. The present teaching and research laboratories are working to capacity.

The pressing needs of the Department, therefore, seem to be: a continuation of research funds, and, as soon as possible, increased space and enlargement of the staff in order to take care of what seem unquestionably to be the normal opportunities for growth.

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## TECHNICS AND THE WOMAN

(Continued from page 115)

off in the immediate, tangible, practical sense, as a result of the scientific application of ingenuity and inventiveness, even though room for improvement is, in her eyes at least, vast.

But man often fails to remember that there is another and far more important phase of the question. To return for a moment to our electric dishwashing machine: To many women, the actual washing of dishes is fundamentally pleasant; the suds, the warm water, the manual occupation all contributing toward the establishment of a contemplative mood, a surcease from pressure and frenzy. The machine takes away from her not the worst of the drudgery, but this, the most important part of the operation philosophically. In doing so, it symbolizes rather well the basic effect which science has had upon her.

The contemplative frame of mind is more necessary to woman than is anything else — far more necessary to woman than it is to man — because the potentiality of motherhood is the cause and the result for which woman exists and has her being; and the essence of motherhood is contemplative. Whether she has children or not, woman must be a mother; she must make some corner into home, a focus of calm and poise, where security and stability rule, where contemplation is ordered. This state is the core of being a woman. Around it always there have been fringes of odd jobs — housework, dairy work, farm work — reserved to woman, varying in detail with the centuries.

The emancipation of woman, as man has seen it, has been to free her from the drudgery of her odd jobs, generally by substituting a new way of doing the odd job. The new ways which science has supplied are easier than the older ones, but they are only substitutes. For many women, they have led to a complete departure from the routine of home, dairy, or farm, to the substitution of an adding machine for a washboard, to jumping when the buzzer sounds to call her to some kind of ancillary task which depends upon the male boss's need or whim. In this aspect, the use of science for her emancipation has been to her little more than a restatement in new terminology of what man considered the old dependence and inconsequence. Moreover, it has put her into callings for which she was not meant, often with serious results in psychological maladjustment and spiritual unhappiness. It is an interference with the natural order of things and as such enjoins penalties.

Science thus has gone further than the fringes of woman's world and has trespassed upon the central core of independence which has hitherto always been hers, even though man could not understand it and did not recognize it. It is tending to take from her the self-contained, creative calling which is hers by right. The deferred marriage, the flitting of the wage earner from job to job, the economic uncertainty produced by booms, depressions, and technological unemployment enforced by centralization and industrialization — all of these combine to make her question science.

(Concluded on page 130)

*Technology Men . . .*

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Some of the features of the January, 1937, issue are listed at the right.

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### JANUARY, 1937, ISSUE

#### High-Speed Photographic Methods of Measurement

H. E. EDGERTON, K. J. GERMESHAUSEN, H. E. GRIER

#### Building — The Forgotten Child of Physics

JOHN ELY BURCHARD

#### Let the Physicist Change Your Oil

PAUL D. FOOTE

#### Physics in the Metal Industry

Z. JEFFRIES AND E. Q. ADAMS

#### Evolution of the Crystal Wave Filter

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## TECHNICS AND THE WOMAN

*(Concluded from page 128)*

It is not that woman objects to scientific advancement; it is rather that she objects to scientific meddling with the natural order. Woman is at heart a peasant. She would rather have the feel of earth in her hands than the sight of orchids on black velvet, for she must have direct contact with the actual, with as near to ultimate reality as is possible. A mechanical contrivance which will save her carrying buckets of water from a well is not a substitute for a reality, but when science substitutes the electric fan on the living room table for the shade of the maple tree on the front lawn and so orders the conditions of living that urbanization makes the substitution inescapable, then woman is at war with science. When science devises a machine which will carry people from the Atlantic to the Pacific Coast in four days, woman may marvel at the cleverness of the machine, but she is more likely to wonder at the idea. Wherein lies the virtue that so much distance can be covered in so short a time? Is the world any the better place in which to live or into which to bring children? Does the achievement make for wisdom? for kindliness? for contentment and stability?

The essence of life, then, is made up of abstract qualities which cannot be poured into or out of a test tube, abstract qualities which, as woman sees them, demand security for survival. The maintenance of them has been her main task since men began to walk upright. To obliterate them is, in her eyes, to obliterate the justification of existence itself. Therefore she argues that science should first work out a philosophic justification for its inventions and the changes it imposes; if the inventions and the changes follow on such justification, they will probably be sound. Speed and change in themselves are not philosophic justification for anything. They are the cause of instability, unrest, insecurity. And as science is directly or indirectly responsible for these things, woman must condemn it. She has adapted herself to some extent to the scientific age, to her emancipation without representation, for adapt she must if she is to survive as woman. Compromise she cannot, in spite of any evidence to the contrary in Russia at present; there can be no compromise, fundamentally, with childbirth and with what childbirth brings in its train. That is the philosophic position engendered in her by nature. So long as the natural order is not too far thrown out of gear by artificialities, woman will survive, but when civilization sets too great a handicap on early marriages, on family life, on the contemplative attitude, then science will have to go along with Julian Huxley and decant its babies, for woman will have been successfully nullified.

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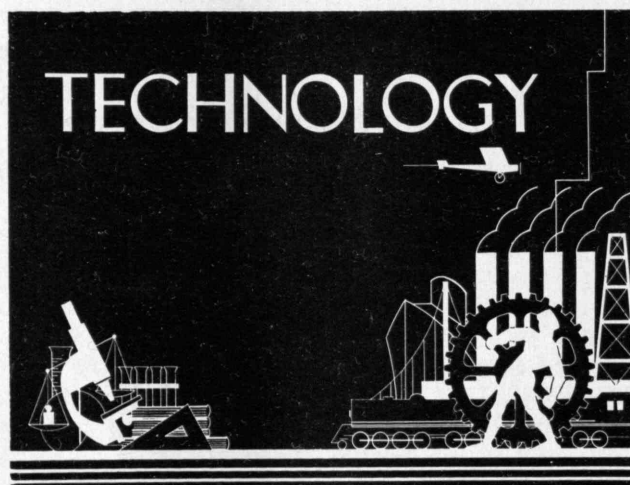
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*AN AID TO INDUSTRY IN LOCATING OUTSTANDING MEN*

## PROSPECTS FOR 1937

With only a limited number of graduates still available for employment from the classes of 1935 and 1936, and an increasing demand from industry, the employment prospects for the class of 1937 are more encouraging than for any recent class. During the period from January to July 1936, approximately two hundred personnel representatives of the larger companies visited the Institute in search of new personnel for their organizations. Many of these companies have already sent their representatives to the Institute this year.

On account of the anticipated large demand for 1937 graduates, employers are urged to inform the Placement Bureau of their probable personnel requirements as early as practicable.

*Inquiries regarding this service should be addressed to*

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*AN AID TO ALUMNI IN FINDING DESIRABLE POSITIONS*

# TECHNOLOGY MEN IN ACTION

CHECK LIST OF THE ACTIVITIES AND ACHIEVEMENTS OF M.I.T. ALUMNI, OFFICERS, AND STUDENTS

## *The Spotlight Shines*

¶ On O. C. MERRILL '05 because of his election to the vice-presidency of the permanent organization of the World Power Conference.

¶ On THOMAS C. DESMOND '09 because of his reelection for fourth term as New York State Senator from the Orange-Sullivan County district, where, running on a Republican ticket, in spite of a Democratic landslide he received a plurality of over 17,000 votes, his largest.

¶ On CHARLES EDISON '13, son of the late Thomas A. Edison, because of his appointment as assistant secretary of the Navy.

¶ On GORDON M. FAIR '16, head of the sanitary engineering course at Harvard University, because of his election as chairman of the Public Health Engineering section of the American Public Health Association. JOEL I. CONNOLLY '16 was elected to serve with him as section vice-chairman.

¶ On ROBERT P. SHAW '23 because of his appointment as acting director of the New York Museum of Science and Industry.

## *Written*

¶ By DAVID BAKER '85, "Reminiscences . . . of the Broken Hill Proprietary Company's Adventure in Steel," appearing in three installments in the October, 1935, December, 1935, and February, 1936, issues of *The B.H.P. Review*. Mr. Baker was the first manager of the Newcastle steel works in Australia.

¶ By JAMES A. TOBEY '15, "The History of Ice Cream," in *The Ice Cream Review*. Mr. Tobey states that 300 years ago, at a state banquet given by Charles I of England, the king's French *chef* concocted a frozen dessert "which the assembled *gourmets* received and consumed with delight." Water ices date back to the time of Marco Polo. Also by Mr. Tobey is "The Question of Acid and Alkali Forming Foods," published in the *American Journal of Public Health*, November, 1936. In this Mr. Tobey concludes: "Acidosis is a symptom in certain morbid conditions, but the nature of the diet plays no appreciable part in the development of acidosis, despite the fallacious argu-

ments of food charlatans who exploit unscientific systems of dietetics predicated on excessive acid-forming foods, or on the incompatibility of various food elements."

¶ By H. P. CLAUSSEN '16, "Sturdy Stuff for Sacks," in *The Northwestern Miller*, October 21, Section Two. This article tells the interesting history of Osnaburg burlap.

## *Addresses and Broadcasts*

¶ By ALFRED W. DEVINE '14, assistant registrar of motor vehicles of Massachusetts, before the November meeting of the New England section of the Society of Automotive Engineers, "Safety as It Relates to Present-day Headlights and Brakes."

¶ By F. ALEXANDER MAGOUN '18, before the Metropolitan section, American Society of Mechanical Engineers, November 12, "Men, Management, and the Future"; before the senior class at Cornell University in connection with their placement lectures, November 20, "Human Relations in Industry"; before the class in industrial relations at Yale University, November 30, "Work of Ivan Pavlov."

¶ By BERNARD S. COLEMAN '19, Secretary, Tuberculosis Committee, New York Tuberculosis and Health Association, over station WNYC, November 24, "The Modern Sanatorium."

¶ By J. EARL FRAZIER '24, before the glass division of the American Ceramic Society, October 23, "Engineering Aspects of European Glass Plants."

¶ By KARL T. COMPTON, as dinner speaker before a group of radio heads, in a program celebrating the 10th anniversary of the National Broadcasting Company, November 9.

## *Patent Celebration*

¶ Many Technology names appeared in connection with the celebration on November 23 of the 100th anniversary of the United States Patent Office. DR. COMPTON, writing to the committee for this celebration, stated: "Until quite recently universities have taken little or no cognizance of the patent system, and in many scientific circles the patenting of scientific results is still held to be

unethical. . . . With the growing amount of research being carried on in university laboratories, there are and always will be a succession of inventions in a variety of fields and of all degrees of importance. . . . Inventions which are not patented are often lost to the public, and this is unfortunately true also of certain types of patents which are dedicated to the public. Institutions, therefore, have a certain obligation either to patent a valuable invention produced in their laboratories or to allow some one else to do so. If the invention is truly valuable and has been the result of the expenditure of the institution's funds, the benefits, or a large part of them, should accrue to the institution for the support of further research and for other purposes."

¶ ROBERT E. WILSON '16, Vice-president of the Pan-American Petroleum and Transport Company, speaking in Washington, stated: "Inventions depend largely upon the independent thought of active minds and it is difficult to conceive of a fertile field for invention except in an environment which encourages individual independence to the greatest degree."

¶ On committees in connection with this celebration were: GERARD SWOPE '95, WILLIAM D. COOLIDGE '96, CARLETON ELLIS '00, LAMMOT DUPONT '01, FRANK B. JEWETT '03, ANDREY A. POTTER '03, EDGAR S. GORRELL '17, DUNCAN A. MACINNIS, former Staff.

## DEATHS

\* See class notes for account.

¶ HARRY W. JONES '82, date not known.

¶ ROBERT W. BUSH '87, August 6.

¶ FRANK A. LAWS '89, November 12.\*

¶ JOHN H. BUTTIMER '94, November 10.

¶ FRANK P. McKIBBEN '94, November 27.

¶ MRS. CHARLES W. SAWYER '94, November 30.

¶ W. LOUIS CHAPMAN '95, November 15.

¶ GEORGE F. ASHLEY '00, October 24.

¶ JOSEPH F. PHELAN '15, November 3.\*

¶ GUY D. TOWNSEND '25, June 21.

¶ JAMES A. YATES '30, August 23.



# NEWS FROM THE CLUBS AND CLASSES

## CLUB NOTES

### *M.I.T. Women's Association*

On October 28 the Association had a lively supper meeting to welcome the new women students of the Institute in the Emma Rogers Room at Technology. This was the start of an active program to stimulate good fellowship between students and Alumnae and provide some professional contacts.

### *M.I.T. Club of Akron*

The Club departed somewhat from its usual routine on October 16 and had a meeting of a different nature, certainly in so far as location was concerned. One of the local breweries has an attractive tap-room which sometimes they are willing to donate to group gatherings. About 35 members of the Club attended the meeting and enjoyed a very fine buffet supper of the Dutch variety with ample quantities of good cold beverage to wash down the cheese, cold meats, and all the trimmings. After the dinner a representative of the Ethyl Gasoline Corporation gave a most interesting talk on "Motors and Motor Fuel." He had a small engine for demonstration purposes and managed to arouse considerable interest among those present, prompting many questions.

All in all, the meeting was a fine continuation of the series of excellent gatherings which our entertainment chairman has been arranging. — JAMES B. HOLDEN '30, *Secretary*, 276 Sundale Road, Akron, Ohio.

### *Technology Club of Albany*

A dinner meeting of the Club was held at the University Club on Monday, November 9. The report of the nominating committee was submitted by C. Hancock Wood '91, and the following officers were elected for the ensuing year: President, John G. Fairfield '16; Vice-president, James H. Finley '25; Secretary-Treasurer, Redmond E. Walsh, Jr., '28.

Our guest and speaker, Professor Earl B. Millard, was introduced by Edward H. Sargent '07, retiring President. Dr. Millard's talk on the progress that has been made at the Institute during the past year was received with great interest, and a lively discussion was initiated. The following were present: A. F. Allen '12, H. M. Chapman '02, E. S. Chase '06, J. G. Fairfield '16, G. C. George '11, H. F. Hedberg '20, W. H. Hoar '26, C. A. Holmquist '06, E. H. Sargent '07, C. E. Smart '05, A. E. Wagar '30, R. E. Walsh, Jr., '28, W. A. Wilber '34, C. H. Wood '91. — REDMOND E. WALSH, JR., '28, *Secretary*, New York Power and Light Corporation, Albany, N. Y.

### *Technology Club of Bridgeport*

A dinner meeting of the Club was held on October 20 at the Bridgeport University Club and was addressed by Erwin H. Schell '12, who brought the Institute movies with him. The report of the fall election of the Club was made as follows: President, Charles C. Smith '27, for a second term; Vice-president, Donald F. Carpenter '22; Secretary and Treasurer, Ernest J. A. Greenwood, Jr., '34; Board of Governors: Philip G. Darling '05, Max L. Waterman '13, Leslie A. Hoffman '17, James Humphreys '95.

The men who were present and enjoyed Professor Schell's visit were: Richard G. Berger '16, Charles J. Bos-sart '27, Donald F. Carpenter '22, J. Barton Chapman '35, Thomas B. Curran '29, Howard J. Duge '22, Arthur Edwards '23, Ernest J. A. Greenwood, Jr., '34, James Humphreys '95, Currier Lang '04, Newman M. Marsilius '17, Raymond E. Pat-ten '21, Albert S. Redway '23, J. Albert Robinson '02, Charles C. Smith '27, Robert H. Smyth '28, Edgar W. Sniffen '31, William A. Soley, Jr., '33, Eric Sparre '34, Dwight E. Stagg '22, Joseph H. Stagg, Jr., '17, Max L. Waterman '13, Edward L. Wemple '34.

At the November 30 meeting, also held at the University Club, our speaker was Dean Pitre who made the announcement that James Humphreys has been appointed by President Compton as honorary secretary of the Club, succeeding Max Waterman who resigned due to the transfer of his business to New York. — ERNEST J. A. GREENWOOD, JR., '34, *Secretary*, 953 Broad Street, Stratford, Conn.

### *Technology Club of Cincinnati*

After some months of seeming inactivity, the local Alumni foregathered on the auspicious date of Friday, November 13, with H. E. Lobdell '17, who stopped on his way to Texas to learn what had become of the Cincinnati group — other than the one or two individuals who bother Charlie Locke '96 about getting somebody from the Institute to stop over in our "best governed" city occasionally. For this meeting we corralled some 38 of the faithful at the Hotel Metropole for dinner. Lobbie gave us a talk on the Institute's activities and plans that was quite an eye opener for many who had not been in close touch with Cambridge recently. We from "the sticks" do not get back so often as some other alumni groups and so need a little of the inside stuff to encourage us in our connections with the Institute.

The feeling of most of those present who have to look back, some a long way, was that the Institute is certainly on a sane and forward-looking program, judged from all angles. Lobdell's news

was of such different nature from that we have previously received and was of such wide range that we all feel we now have a very good view of a new Institute which is certainly changing its attitude toward the student body in a way that cannot help having most beneficial results.

One of the most faithful attendants at all of our meetings is one of our young men, William E. Brotherton '73, who is always keenly interested in all Technology meetings. Another interested member is Frederick W. Garber '03 who has just recently been elected a term member of the Corporation and takes a very live interest in the progress of the Institute. Unfortunately our meeting conflicted with that of the Better Housing group who had with them a very distinguished Englishman, so that meeting drew heavily on our architectural membership and Garber could not stay through the whole evening. — Another of our members, Charles G. Merrell '88, was busy acknowledging the congratulations he received on his recent election as county commissioner. We all feel that he will give a splendid account of himself at the job, even though his term of office starts at a time of great stress, when the county has a decided deficit in its budget. — The latter part of November found Samson I. Crew '34 marrying Miss Elizabeth Pugh, daughter of Mrs. Pugh and A. H. Pugh '97.

A letter from the Alumni Office has been received, urging local clubs to hold elections in the spring so that the published lists of officers might be accurate for a longer period. Unfortunately this letter came on the very day that our election was scheduled. We hereby promise that even at the risk of having to labor under the handicap of a new set of officers for an additional period, we will endeavor in the future to conform with the advice of the Alumni Office.

Speaking of that Office, I wish to commend it to all local groups as a most coöperative institution, particularly if you meet it half way. It does a splendid piece of work in trying to keep up with changes of location of the Alumni.

Referring to the elections mentioned above: President, Clarence H. Spiehler '08, Columbia Engineering Corporation; Vice-president, Joseph B. Stewart '08, Cincinnati Street Railway; Treasurer, Oliver L. Bardes '21, Bardes Range and Foundry Company; Secretary, John D. Cochrane, Jr., '23, Formica Insulation Company; Directors: Samson I. Crew '34, Samson Engineering Company; John M. Hargrave '12, The Cincinnati Tool Company; and Howard B. Luther '08, College of Engineering, University of Cincinnati.

One of the most successful activities of our local Alumni is our weekly luncheon. This has been continued uninterruptedly

for more than 40 years. We are now meeting at the Hotel Metropole on each Tuesday at about 12:30 P.M. and are much pleased when out-of-town Technology men join us. — JOHN D. COCHRANE, JR., '23, *Secretary*, 734 Brooks Avenue, Wyoming, Cincinnati, Ohio.

### *Technology Club of Hartford*

Inaugurating the 1936-1937 season, 30 members attended a dinner meeting at the University Club on November 5. The absence of our President, Dr. Osborn '15, provided an opportunity for Vice-president Malcolm Wight '06 to justify his existence (as vice-president). Our guest and speaker of the evening was Professor Henry A. Perkins of the physics department of Trinity College, who gave an account of the colorful career of Count Rumford, founder of the Rumford professorship at Harvard. Born Benjamin Thompson in Woburn, Mass., about 1750, he was driven from this country as a Tory at the time of the Revolution, and achieved fame and a title in the courts of Europe as a physicist, economist, and philanthropist.

On November 19 the Connecticut Society of Civil Engineers invited the Club to attend a meeting at Trinity College. Under the justly proud guidance of Professor Kriebel, head of the chemistry department, we inspected the new chemistry building (which, incidentally, was built by one of our members, A. F. Peaslee '14). With all its modern innovations in lab and classroom design, our M.I.T. pride was upheld by noting the lack of a railroad in their lecture room similar to that in 10-250. After dinner in the college dining hall, Professor Troxell of Trinity, taking the subject, "The Geological Setting of Floods," presented his novel approach to the solution of Hartford's Connecticut River flood problem. — GEORGE A. FOGG '26, *Secretary*, 164 Wethersfield Avenue, Hartford, Conn.

### *M.I.T. Club of Northern New Jersey*

The first gathering of the Club for the current season took the form of a non-technical symposium on modern developments in the chemical and chemical engineering fields, both in Europe and in this country. About 150 members attended the smoker, held on November 17 at the Newark Athletic Club.

Sidney D. Kirkpatrick, editor of *Chemical and Metallurgical Engineering*, recounted in a most interesting manner his observations of the up-to-the-minute state of the chemical industry abroad, as collected on his recent extensive trip. Mr. Kirkpatrick injected a number of humorous anecdotes, to the evident enjoyment of his audience. Thus the trials and tribulations of the chemical engineer from Kokomo served to lighten the serious aspect of the widespread application of chemistry in foreign countries for the production of munitions and for other items of an extensive — and intensive — program of national defense.

Next, Chaplin Tyler '23 of E. I. du Pont de Nemours, author and international authority, was introduced by Chairman Ray Brooks '17. Mr. Tyler vividly portrayed the wide field of endeavor of the modern chemical industry for useful and humanitarian projects rather than for militaristic supremacy. The high spot of his talk centered around a well-presented discussion of a comprehensive program of public relations being undertaken by the du Pont organization. Mr. Tyler presented an outstanding reel of sound motion pictures, produced by du Pont, showing the manufacture and application of their large number of products. At the insistence of the crowd, several additional reels of equally high standard of photographic and presentation excellence were shown during the buffet supper which concluded the evening. The latter films, together with the high quality sound motion picture equipment and the services of an operator, were furnished through the courtesy of the Public Service Gas and Electric Company and the good offices of E. W. Vilett '22.

President Mac McNeill '17 presided at a short business meeting preceding the speaking portion of the program. It was announced that regional chairmen had been appointed to contact the 150 schools in the district which have sent students to the Institute and to cooperate with the Club's scholarship committee. The administering of scholarship activities is under the combined jurisdiction of the Club and the three honorary secretaries in the district. J. A. Emery '93, Montclair; R. W. Tryon '25, Cranford; and W. I. McNeill '17, Newark. A Club committee is working on the matter of cooperation with established nonprofit agencies in technical employment for Alumni. The Club's monthly luncheons are being continued on the second Thursday of each month at the Newark Athletic Club from noon until protons or politics have been properly disposed of to the satisfaction of all.

We want to express sincere appreciation to the speakers and, of course, most hearty thanks to all who have worked so hard to make the meetings possible. It was particularly enjoyable to have among the guests and welcoming committee Raymond Haskell '03, R. E. Zimmerman '11, John Johnston, once of the Institute Staff, and R. E. Wilson '16.

The next smoker is scheduled for January. — CAROLE A. CLARKE '21, *Secretary*, 10 University Avenue, Chatham, N. J. FREEMAN B. HUDSON '34, *Assistant Secretary*, Colgate-Palmolive Peet Company, 105 Hudson Street, Jersey City, N. J.

### *M.I.T. Alumni Association of Greater Salem*

The fifth semiannual dinner meeting of the Association was held on November 12 at the Hygrade-Sylvania radio tube plant in Salem. Since the factory was running at night, the members were able to make a trip through the plant and see it in operation. At a business meeting

immediately following the dinner, Mieth Maeser '28 of Beverly was chosen president of the organization for the coming year. Following this, Professor Locke '96 said a few words of a general nature concerning alumni affairs; by way of entertainment Dr. Paul Duff '16 related a few of his famous medical jokes.

The main speaker of the evening was Vannevar Bush '16, who explained to us many of the details of the proposed M.I.T. expansion and development program. The meeting was very well attended, 96 Alumni being present — nearly 50% of the available Tech men in the vicinity. — JOHN D. HOSSFELD '35, *Secretary*, 23 Hale Street, Beverly, Mass.

## CLASS NOTES

### 1873

We note with regret the passing of George H. Kimball, Sr., who died on August 8, the third of the class association to die within the year. Kimball was born at Newburyport, Mass., December 8, 1849. He was a member of the American Society of Civil Engineers, the American Railway Engineering Association, and the American Institute of Consulting Engineers. He was a member also of the Masonic body, the Kiwanis Club, the Torch Club, the Gridiron Club, and Sons of the American Revolution.

His engineering activities were largely related to railroads. Among the most important positions held by him were: superintendent of bridges and buildings, Pittsburgh, Cincinnati and St. Louis Railroad; superintendent, Columbus and Sunday Creek Railroad; engineer of maintenance, Little Miami Railroad; chief engineer, Southern Extension, Toledo, Cincinnati and St. Louis Railroad; superintendent, New York Central and St. Louis Railway; chief engineer, Lake Shore and Michigan Southern Railway; superintendent and chief engineer, Columbus, Sandusky and Hocking Railroad; chief engineer, Pere Marquette Railroad; engineer, Buffalo-New York Trunk Line's freight terminals. In recent years he served as consulting engineer to many railroads.

Besides his widow he is survived by a son and daughter, two grandsons, and three great grandchildren. A man of great character has gone, respected by his classmates, his home people, and by all his railroad officials and the men who worked under him. — GEORGE M. TOMPSON, *Secretary*, 8 Whittemore Terrace, Wakefield, Mass.

### 1877

Harry Colby Southworth, a graduate of M.I.T. in our Class, died on October 17 at his home in West Stoughton, Mass. Death was caused by septicæmia. Mr. Southworth was born, February 26, 1857, in Stoughton, the son of Lemuel Hewins Southworth, a descendant of Jediaiah Southworth, an early settler, and Mary Colby Southworth, who was born in Augusta, Maine. He married, July 11,



1877 *Continued*

1898, at Dedham, Mass., Elizabeth J. Hilles. One son was born to them, Lloyd Hilles Southworth, at Stoughton, Mass., October 29, 1906, who is at the present time employed as chemist at the Lever Brothers Company in Cambridge, Mass.

Mr. Southworth's early education was obtained at Stoughton before his graduation from the Institute as a mining engineer. He went to the Quincy Mine in Michigan for his first assignment as mining engineer and county surveyor when only one other engineer was doing similar work. As the country developed, other engineers located in this district. In 1885 Mr. Southworth took charge of the Ropes Gold Mine near Ishpeming, Mich., where he stayed until October 13, 1885. A few years later he went to Minnesota, where he spent the summer in the wilderness on the Vermillion and Mesaba Iron Ranges in the interest of Houghton and Boston parties. In 1888 he was elected to the legislature of Michigan for the term of 1889-1890, spending six months, from January to July, in Michigan at Lansing in that capacity. While at Lansing he was instrumental in helping to secure a large appropriation for the Mining School at Houghton at a critical time in its history.

In July, 1889, he came back to Stoughton on a visit and never returned permanently to Michigan. In the Nineties he was appointed grade-crossing commissioner for a large number of commissions on the Boston and Albany, Old Colony and Providence roads. The most important of the commissions were that for the abolition of the crossing at grade from Forest Hills to Boston, that at Readville, those from Readville through Dedham to Roslindale, and that at Brockton. In the middle Nineties he became interested in mining in Colorado, Utah, and other Western states. In 1904 he took charge of his father's business — grain, and so on — which he continued until 1930, when he retired due to ill health, the result of an operation from which he never fully recovered.

Southworth had no hobby, unless it were travel; he visited or passed through nearly every state, territory, or province of the United States and Canada. In 1899 with Mrs. Southworth he made a very interesting trip to Europe. He also visited Saint Lucia and the Isthmus of Panama. He was always interested in world peace and in national and town affairs. He held various offices in Stoughton. He was a believer in single tax as presented by Henry George. — He is survived by his widow, a son, and one sister, Mrs. Henry A. Wyman of Middleboro, Mass.

Mr. Southworth is the third member of our Class who died last year; all were graduates. One readily learns of their value to our country by reading the accounts of their lives. George Bartol and Harry Colby Southworth were mining engineers and Charles Follen Lawton was a civil engineer. Much of the value of their life work was due to the four years spent at M.I.T.

Following is a very interesting letter

(dated November 12) from George W. Kittredge of Yonkers, N. Y.: "... I was sorry to hear of Southworth's death. He came back to the East a very much broadened and advanced man from what he was when we knew him at Tech. I have known really very little about him at any time. I had a good talk with him at one of our meetings at Brae Burn, for I had done a lot of grade-crossing elimination work in my day and he was interested.

"Much to my delight I shall have my son, his wife, and daughter (nine years), and my daughter, her husband, and their two children (13 and 10 years) with me for Christmas. They wanted me to go to California, and when I declined they said they would come here. I don't remember to have heard of your wife's death; I surely would have expressed to you the sympathy which I feel. I remember hearing of your son's death, at one of our class meetings. My wife died 15 years ago, and her two sisters — both older than she — came then to live with me. One of them died three years ago and the other, 10 months ago, so that now I am entirely alone in a 20-room house on a city lot of one-and-one-half acres, with only the domestics to look after me. I still get much pleasure in life. I have a host of very warm friends and my 'farm.' My poultry (chickens and turkeys) and my racing pigeons keep me as busy as I want to be. Attending class reunions has always been one of my greatest pleasures and our having such a fine secretary as you are keeps up the interest of all of us. We are most fortunate.

"I shall celebrate my 80th birthday on December 11 and my children are arriving to get here for that event. I am busy every minute of the day in some way or other, and, as you say, that is a life saver. . . ."  
— BELVIN T. WILLISTON, *Secretary*, 3 Monmouth Street, Somerville, Mass.

#### 1883

George Bryant of Newport, R. I. (very swank!), assists in the "50 years ago" essays with the following: "After graduation I worked for a year in Lowell for the water power company which controlled the distribution of water to the cotton mills there. Then I spent a winter in Winston-Salem, N. C., trying to work up a mill equipment business among the tobacco factories. This did not pan out very well and in the spring of 1885 I got a teaching job at a state college in Auburn, Ala. This was the Agricultural and Mechanical College of Alabama, afterward renamed Alabama Polytechnic Institute. My job there was to establish, equip, and manage a department of mechanic arts with the view of ultimately developing it into a department of mechanical engineering, which was accomplished later by my assistant and successor, Professor John Wilmore.

"The curriculum of the college, like that of most such institutions in the South at that time, was based almost entirely on academic lines; the grade was not high as compared with the older colleges of the North, and preparatory

schools were few and inefficient. So I had to begin with some pretty raw student material.

"At that time this was the second school giving formal mechanical instruction to be established in the Southern States. That first summer (1885) I spent at the college getting the plant ready: building a boiler house and stack, buying and installing boiler, engine, wood-working machinery, benches, tools, and so on. The engine I bought was an exact duplicate of the 25 horse power Harris-Corliss which we used to take apart and reassemble under Professor Whitaker's direction in the basement of the old Rogers Building. . . .

"I worked hard through that first summer (a warm experience for a young Northerner on his first visit to the far South) and by fall had most of the equipment ready and a course of teaching laid out. Then I went north, married, brought my wife back to Auburn, and set up housekeeping. Since the institution was a state agricultural and mechanical college, in order to obtain Federal land grants, military drill was given to all students. The corps of cadets (usually under a United States Army officer as commandant) was, therefore, a prominent feature of college life.

"The president and several members of the faculty had seen service in the Confederate armies and as the Civil War was only 20 years past, the atmosphere of the college and the town, both socially and intellectually, was strongly tinged with sympathy and regrets for the 'lost cause'; so it behooved a Yankee like myself to watch his step! However, I enjoyed the work and when I left in 1891 to locate in California, I had the satisfaction of knowing that the work had been well started and was on the way to developing a full-fledged department of mechanical engineering. The institution has since become an engineering college of high grade. . . ." — HARVEY S. CHASE, *Secretary*, Bridge Street, South Hamilton, Mass.

#### 1887

An unusually large number — 10 — of the Class responded to the Secretary's suggestion that any communications would be appreciated; there are a number yet to hear from.

Henry Hill writes from Augusta, Maine, as follows: "I received Draper's book ('Venturing Betimes') all right, also the tug-of-war team picture, for both of which I thank you. The book is a 'humdinger'; it's the best thing I have read since Mark Twain's '1601.' I was in the '86 tug-of-war team. We beat Harvard, also some other place, and were given a dinner; I remember it well, for that is the nearest I ever came to being a hero. . . . I knew Nickels' family, well and also some of his folks in Cherryfield. I am sorry I cannot recall Draper, for he's a man after my own heart. I might perhaps criticize his liking for roulette and — apparently — neglecting the noble game of faro. I should hate to run up against him at poker. . . . I don't know

1887 Continued

when I have enjoyed anything as I did the last class dinner. I shall attend all the others unless I break a leg or get put in jail. It is raining hard here this morning, the opening day on partridge and woodcock. It's too bad, for the last month I have been locating woodcock. Not many years more of it for the little Hill boy."

Ben Lane writes: "I sympathize with your editorial responsibilities, but upon my word I haven't a single item of personal news that I can think of worth putting into *The Review*, even under a class column, unless it is that my youngest daughter, Priscilla, was married October 10 to Mr. Robert Hugh Anderson, also of West Roxbury, Mass., last year the golf champion of Needham and in winter time manager of the Spaulding-Moss hockey team in the ice hockey commercial league of this city, which takes in the leading banks and newspapers. I had the pleasure of taking Windy Cole to a church supper last night, which I think was quite a novel experience for him, but he showed his usual remarkable ability to entertain all the ladies whom he contacted. Hope to see you at the grand reunion next year."

Frank Brett, writing from the wilds of North Duxbury, Mass., next receives attention. He says: "While looking for something else in the garret I came across 'Souvenir Class '87,' and have just finished reading it, for the second time in 50 years; pretty interesting, good pictures of the class officers, and so on. Among other things I was amused at the prophecies which, while correct in some particulars, never mentioned the man who in all probability is today the best known of any in the Class, Gelett Burgess. With the exception of Giles (Taintor), whom I met on the street last summer, I haven't seen a classmate for over a year. I wish they were all as well as I am (except for the deafness)."

William B. Blake comes next, with the following: "Mrs. Blake and I are domiciled at 925 Eleventh Street, North, St. Petersburg, Fla., for the winter, where we shall be glad to greet classmates who may be here during the winter months." [Under date of November 16 the alumni file shows Mr. Blake's address as 2836 Sixth Avenue, North, St. Petersburg.] — George F. Sever, from the good Old Colony town of Kingston, is the next to be heard from. George says: "I have not much vital news to tell. I am working on a WPA project, assisting in making a complete record of the physical characteristics of the Kingston water works system. We are making complete plans of the location of the house shut-offs, gate valves, hydrants, piping, wells, reservoir, and pumping station. I have been on it since April 1. I still am interested in stamp collecting and make that my hobby. I think I recollect seeing your picture in the paper a while ago making up to a sea gull. If it was you, you must have a way with you. Did he tell you the story of his life?" (The Secretary's pet hobby last summer was the rearing and training (?) of a family of three young sea gulls, hence the foregoing reference.)

John M. Fox, of Portland, Maine, whom we would like to see more frequently at the class functions, referring to our coming 50th reunion, writes Arthur Nickels as follows: "As named in the 'Maine delegation' I judge you, like myself, have not regularly attended '87 class dinners. It (our 50th) certainly is an occasion worth celebrating. Hope we may meet there." — Arthur R. Nickels, writes from Bath, Maine: "Received 'Venturing Betimes' and finished reading it last night. I found it very entertaining, particularly his trips through the West. Draper has had such a rare experience that to know about it is quite worth while. Green writes of Burgess. I met him a few times in San Francisco, the last two times at Will Bliss's home located quite near the site of the new bridge spanning the Golden Gate. That was about 1902; a good deal of water has run over the dam since then. I have seen Will Bliss since then; I think that it was December 25, 1927, when I was located in Nevada and ran in to San Francisco over Christmas. In 1891 I used to see E. G. Thomas, in fact, we roomed together; also Frank Shepard, in Denver; P. A. Mosman in Pueblo, now at 120 Broadway since 1911, with Karl Eilers. Last winter while in New York, *en route* to Bermuda, had lunch with Mosman and Norris at the Bankers Club, of which the former is a member. I hope to go to Florida shortly after New Year's and may take boat from Boston, Merchants and Miners line. Their boats call for a day each at Baltimore and Norfolk; leave boat at Jacksonville, then to 'St. Pete' for the remainder of the winter. — Yes, I expect to be present at the 50th dinner next year. I hope for certain reasons that Draper will be there." (George has promised the Secretary that he will.)

From Maine to California is heard the rallying cry: "On to Boston in 1937." Having heard from the "Maine delegation," make way for the message from our popular playboy from the West Coast, George Otis Draper, whom we all, as well as Nickels, hope to meet next June. George writes: "I am living here in San Pedro in the midst of a strike and was advised not to complain against two of the longshoremen who stole gas from my car, as I might get a rock through the window, but they are in jail. Government officers have refused to obey a Court order and have perishable goods unloaded, as 'it might lead to (illegal) violence.' I recently flew over Boulder Dam, lake, and Grand Canyon; it is a great sight. Am going round the world again in January, to be back for the class reunion. When they think of me as a prize loafer I am reminded of when I worked with three associates for nine years without any of us taking as much as a three-day vacation in all the time. I suppose we shall dully droop from this present Pink Socialism to Sharing-the-Wealth and, finally Communism, unless a Mussolini appears; we are under the rule of the Unions today, just as sure as the accepted divinity

made little apples. Fortunately, one gets so calloused by the copious contacts that he does not seem to care."

From Chicago we are favored with communications from Sturges and Lonsdale Green. The former says: "I wish I could drop in at Parker's and see the old fellows once in a while. I very rarely get to Boston or even to the East. Dick Schmidt and I will be there, however, next year, God willing. We have already started saving up for it. Chebacco Island, with its lobsters, clams, and sweet potatoes, makes one smack the lips. — I never read Guy Kirkham's book, but remember supporting Patti or somebody, and having everybody behave so disgracefully that when Tim Sprague went down the next night and was asked if he had ever had any experience and replied: 'Of course, I was down last night,' the doorkeeper said: 'Well, by (deleted) if you were, you can't get on tonight.' I remember Hill, as he was our champion high kicker. You say he says 'he would come back if he does not break a leg.' I expect to see him next year. I guess Lonsdale Green will be there also. I have not seen him in some time, but he was always greatly interested in '87."

"My life is going along about as usual. I got married a second time, three years ago last April. The last four years have been rather difficult. I am going out tomorrow to see the Minnesota-Northwestern football game. The former, I think, is the best in the country. I can remember when anything outside of Yale, Princeton, and Harvard was considered 'N. G.' Now there are generally five or six teams that are better. It is a great game. We have a professional team here which is one of the best in the country. I have seen them play, and they are wonderful. They are made up of the best college players, and being older and heavier and tougher, they have the advantage over the college team."

From Lonsdale Green: "Dick Schmidt and Lum Sturges are looking forward to the 50th reunion. We three have been counting on it ever since our 40th. I see Sturges quite often, for I know that I can drop in on him without (much) trespass on his time. . . . With Dick the case is different. His office is guarded by two sentries who ask you to state your business, then tell you to wait, as he is in conference. Dick has a deputy who has plenty of authority, but even so, most of the visitors insist on seeing the head. Anyhow, unless you have business you cannot drop in and chat. Both Sturges and Dick live miles away from me, as they are Northsiders and I am 65 blocks away on the South Side. Almost the same as you would find yourself if you called the residents of Quincy your neighbors. — I bought three of Burgess' latest books, and wrote him a letter about one of them. He wrote me a nice letter in answer. I have Granger Whitney's book of poems — very enjoyable. One of my fondest recollections of Tech is the torchlight parade of the Blaine and Cleveland campaign of '84. I was herded with the



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'87 Class, but just as the parade started some boss came along and said the band needed more light. The band men could not carry torches and needed a torch for each player, so several of us had to go and march up front with the band. I believe it was a hired band. I am almost sure that it was, for in those days no Tech man owned big brass tubas, only guitars and mandolins. — I retired in March, 1929, at the age of 65, and on March 20 I was on the ocean headed for Europe. I stayed there six months. We will be celebrating our Golden Wedding on May 19, and I hope that our 50th reunion will not be on that day." On behalf of the Class, the Secretary extends congratulations and also the assurance that the reunion will not occur until June.

As most of the foregoing was received during the heat of the recent political campaign, the Secretary deemed it wise to delete such matters as pertained to candidates, policies, and forecasts, but in spite of this filtration the articles still retain much of their original flavor. — NATHANIEL T. VERY, *Secretary*, 1 Hamilton Street, Salem, Mass.

## 1889

Hall Gleason has written a very interesting book entitled "Old Ships and Ship Building Days of Medford" which he has privately published. It contains an extremely interesting history of the doings of many of the Medford-built ships and is copiously illustrated, many of the pictures being reproductions of Juddy Wales's beautiful pencil drawings. Others are reproductions of old ship paintings. The book contains also a complete list of Medford-built vessels from 1803 to 1873, with accounts and descriptions of each one. Any one interested in sailing ships will find Hall's book a highly valuable addition to his library. Hall has also been putting in some of his spare time singing first bass in the University Club Glee Club at club concerts and other occasions.

The Class has lost one of its most faithful members in the death of Frank Laws which occurred rather suddenly on Thursday, November 12. The following inadequate account of his life is from the Boston *Evening Transcript*: "The funeral of Frank A. Laws, Professor Emeritus of Electrical Engineering at the M.I.T., was held today at the Waterman Chapel on Commonwealth Avenue. Rev. Ashley D. Leavitt, minister of the Harvard Congregational Church, Brookline, conducted the services and burial was in Melrose Cemetery, Brockton. Professor Laws died . . . at his home, 86 Browne Street, Brookline, in his 70th year. His book, 'Electrical Measurements,' published in 1917, is considered to be one of the outstanding works on the subject today. It has recently been revised and augmented for a new edition. Professor Laws was born in Brockton, the son of Alfred and Clara (Balch) Laws. In 1889 he was graduated from M.I.T. and then continued his studies at Harvard. He was a fellow of the American Academy of Arts and Sciences, of the American Institute of Electrical Engineers, National

Electric Light Association, Society for Promotion of Engineering Education, and University Club of Boston. He also wrote 'Notes for Use in Standardizing.' Professor Laws was a member of the M.I.T. Faculty for more than 40 years. He leaves his wife, the former Miss Harriet Patterson Burbank." — WALTER H. KILHAM, *Secretary*, 126 Newbury Street, Boston, Mass.

## 1891

George Hooper received a letter from Mrs. Shaw stating that her husband Edward Hagan Shaw died in Oakland, Calif., on August 31. Shaw went to Tech only a short time and the last communication we received from him was a questionnaire returned to us in 1931. At that time he was a salesman for advertising novelties. For some years he was the local representative of the Bergen Manufacturing Company. He had three children, two girls and a boy. — F. Clouston Moore wrote Barney recently: "Thank you for your kind letter of last August, telling me about the meeting at East Bay Lodge. You must have had a grand time. Sorry I could not participate. Instead I spent half the summer in a hospital at Chicago and the rest of the time to date has been spent in getting on my feet again after a rather severe surgical operation. I am out and around again now, but nevertheless taking things pretty slowly. I expect mine was about the usual experience, going about my business as usual, then suddenly advised that I must immediately undergo an operation, or else? July was the hottest month on record in Chicago, many days over 100 degrees, and I spent the month on a hospital bed!" We missed you, Fred, at our reunion and are glad to know that you are out again after your long siege.

Horace Ensworth writes that he is home again after a trip across the water. — We received a letter from Charlie Ricker in Havana last September telling of the death of his wife. Those of us who have visited Havana, and been recipients of the Rickers' hospitality have most pleasant recollections of Mrs. Ricker. The sympathy of the Class is extended to Charlie, and we will hope to see him when he comes to the States. His letter follows: "I have a sad announcement to make. My wife died, August 18, at the University Hospital, Cleveland, where she had been under treatment for about six weeks for aplastic anemia, which she was not strong enough to throw off. After that, they had me in hand for a while, but early in September they let me come back to my work here, under strict supervision. So I haven't any plans except to try to get myself into shape again physically, which will take some time, I suppose. My son is well established in Cleveland and doesn't need me at all, but it seems foolish to leave the family, only the two of us, spread out so thin. I have still some work to do here and the household equipment to break up and after that hope to get back among people with whom I used to live."

Hanington writes of his work in Denver and of funds they received from PWA to aid them in their work. He is president of the Colorado Museum of Natural History. The loss of his son was a severe blow and, as he says, it is hard for them to make a readjustment. He wants to know when the Class will get a new address book. The 45th reunion book is now in the printer's hands and should be out around the first of the year. The Secretary apologizes for not having answered the many letters and telegrams received at the reunion. They will all appear in the class book.

Robert Ball wrote Barney in September: "It was very good of you to write so fully about Charlie Aiken whose loss I shall mourn as a very old friend. We spent the summer of 1890 together in the White Mountains and I always remember his cheerful companionship and kindness. He entertained me at his summer home on Webster Lake also and we had some fine times together. Alas the grim reaper is making inroads on our diminishing numbers, but we cannot alter that and can only be thankful that there are so many of our friends still on this side. You have been so efficient in keeping me informed that I have been able to keep my lists up to date I believe and there is no need for you to think that you have been remiss in anything. I am so glad that 45th reunion was such a success and I wish I could have been present in the flesh, but I was with you in spirit. We are all well here and have good news of my son in Kenya who is enjoying his life very much as he has found his *métier*, and, after all, if we are happy in our work, that is the main thing."

There have been a number of pilgrimages to Cohasset this fall to see Barney: the Reads and their daughter; Harry Cole, his daughter, and her two children; Charlie Clark; George and Mrs. Holmes and their daughter; Gorham and Mrs. Dana, who showed Barney the movies of our 45th in color and other colored movies taken at their summer home in Sunapee. We are looking forward to our usual class dinner this winter and a look at Gorham's movies.

Two letters from Charlie Garrison: "I sent an air-mail letter to Charlie Aiken as suggested, but it probably arrived the day of his death. What a loss to us all! He seemed in such good spirits at the reunion. We saw George Hooper and his family (Mrs. and the two daughters) at Montecito, where they were staying for a couple of weeks. Marg is finally through with her doctors, nearly four months of it. She is much better and can probably control the trouble to a considerable extent. She made us a visit during the end of August and we drove her back on September 1, staying a couple of days in San Francisco. I have recently got a victrola, the latest thing in reproduction, and we are having some exceptionally fine music."

"In the middle of September we spent a week-end with Bob in his new house, which is very attractive. We took a drive into the heart of the San Bernardino

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Mountains, the northwest flank of Mount Baldy. The children played in a mountain brook and we returned to San Marino in time for a noon dinner. We can go from here to Bob's in less than three hours (117 miles) through the back country. My sister Eleanor has recently driven out and is visiting in Hollywood. She lives in West Denis, a few doors from John Putnam." — Charlie says he has the reunion picture on his desk with all the names. The picture and names will be reproduced in the class book.

Another interesting letter from George Hooper written in early November: "Having read The Review which has just arrived, it occurs to me that I can contribute a little information for the class files about Mahon, whose death is therein noted. He was a 'special,' coming in during the sophomore year and had some studies with me in Course II, so that in that way I gained some acquaintance with him. He was older than the average of the Class, having spent some years in the printing business with a brother before joining the Class. He endeavored to enter athletics, but was prevented by defective eyesight, which compelled the constant wearing of glasses. He was an agreeable companion.

"I am enclosing a folder illustrating another motor trip which we took in early October, in the endeavor to escape the late summer heat here. We planned to reach Eureka, Calif., from which point we were driven back by the heat in July, but again fell short of our objective as I shall later describe. After overnight stops as usual at Santa Maria and Carmel, we stayed for a week-end at Oakland to see our son and also to see the finals in the Pacific Coast Tennis Tournament held at Berkeley, in which Helen Wills Moody, Helen Jacobs, Don Budge, and other first-rank players took part. For about five hours we had a splendid exhibition, stopped only by the dark. This may have been Mrs. Moody's last appearance.

"While passing through San Luis Obispo, I stopped at the district engineer's office to get the latest news about the shore road to Carmel, the opening of which has interested Charley Garrison and me for several years. The man in charge was willing to give me a pass to make the trip, but from his description of the conditions, I thanked him and declined. Dodging trucks, graders, and steam shovels on a construction road, 500 to 600 feet above the sea on the edge of a cliff, would have been no treat to my wife, so we took the old road, resolving for another trip next summer.

"From Oakland we started north over the Redwood Highway, going again through the grape and hop country to Ukiah. The harvest was on for these crops and the wineries were in full blast. The pungent odor of the drying hops filled the atmosphere. The next drive took us into the redwood country along the cañon of the south fork of the Eel River, passing through numerous redwood groves. The cañon is narrow, just about enough room for the river and

road, although it opened out in places into so-called flats, in which were settlements. At many places the road was several hundred feet above the river. At one point we drove for a number of miles through the aftermath of a forest fire, which had been extinguished about a month before. The conditions were appalling, such enormous areas, heavily wooded, so few roads and trails, and so small a population. On both sides of the road were the remains of dwellings and barns which had been destroyed, and along the road a few gas stations likewise. The country is very beautiful, mountainous and rugged, and well watered, with fine vistas up side cañons. We stopped in several of the groves and walked about where the underbrush permitted.

"At the end of the day we reached Benbow Inn, an attractive hotel located on an oxbow of the river, this making a large open area of several hundred acres. The river nearly surrounds the hotel and full use is made of this for canoeing, swimming, and so on, and other water sports. This is one of the places remaining open the year round; many of the others along the way were closed for the season.

"On leaving Benbow on our return we planned to take the Ukiah-Lake Tahoe Highway, leaving this to go by Clear Lake down through Napa and Sonoma counties to Oakland. Sonoma Mission Inn was our destination, but we stopped so many times to admire the scenery around Clear Lake that we got only to Calistoga by nightfall. Clear Lake is a very large natural lake, preceded by two chains called Blue Lakes and Upper Lakes; the country resembles the Berkshires in Massachusetts, and the highway runs beside these lakes for many miles. Below the lower end of Clear Lake we branched off onto the Silverado Highway, which runs through the district covered in Stevenson's book the 'Silverado Squatters.' This country was very broken and the road very hilly and tortuous and the last 20 miles, through such thick forest that although it was but sunset time, the road was so dark that lights were required. Calistoga, where we spent the night, possesses the remains of much volcanic activity in geysers, both mud and water, and mineral springs. It is the center also of a large wine-making area. From there we returned to Oakland, via Napa and Sonoma, through another wine-making area — all very busy in collecting the crop — trucks laden with tons of grapes on all roads. After another night at Oakland we went over to Carmel via Dumbarton Bridge, Palo Alto, and Santa Cruz, passing through the first rainfall of the season in crossing the mountains between the two latter places.

"Last week we called on Burt Kimball at Redondo Beach, but did not find him at home. I have a note from him, however, saying that he is enjoying life out here and will come up soon to see us. I wrote T. M. Brooks sometime ago on learning that he was settled at La Jolla, but have had no response. He and I were in the employ of the Deering Harvester

Company at Chicago at the same time in the late Nineties. When next I am in La Jolla I will look him up."

Changes in address: Harry Young is now living at 192 Commonwealth Avenue after 16 years at Marlboro Street, Boston; Harmon Wendell's present address is 1383 Cadillac Boulevard, Detroit, Mich.; Alexander W. Moseley is now located at 611 Elm Avenue, Swarthmore, Pa. We have received the following address for Lewis A. Dunham, for whom we formerly had no address: 166 Second Avenue, New York City.

The following notes were sent in for the November Review but were not printed because of lack of space: From the Newton, Mass., *Sun*: "Spare and tall, moving with an alertness and assurance more like forty's than that of sixty-six, Salmon Willoughby Wilder, internationally known manufacturing chemist, residing at 64 Homer Street, Newton Centre, is just living up to the family tradition! His mother is 97 years old and has three brothers and two sisters living.

"Born, February 10, 1870, in Lawrence, Mass., he was graduated from Lowell High School (1886), studied abroad (1886 to 1887), and took his S.B. in chemical engineering from M.I.T. (1891). This was the first class in chemical engineering to be graduated in this country. There were only seven men in the Class. — After working with the Russell Paper Company, Lawrence (1891 to 1893), and with William Russell and Son, Boston, and Fall River Mountain Paper Company, Bellows Falls, Vt. (1894 to 1897), Mr. Wilder joined the Merrimac Chemical Company in 1897 and in 1899 was made manager. Becoming treasurer of Merrimac in 1903, president in 1906, and chairman of the board in 1928, he has given largely of his time securing tariff protection for American chemical industries. In this connection he has given deep study to tariff problems and has often appeared before the Ways and Means Committee of the United States Congress in behalf of the American chemical industry. As a result of the work in which Mr. Wilder has shared, this country is no longer dependent on foreign nations for its chemical needs.

"Mr. Wilder retired from Merrimac in 1931 after 34 years of continuous service. Among the many important offices held by him at one time or another are: member of the Corporation, M.I.T.; member, chemical advisory committee to United States Department of Commerce; chairman, executive committee of the Manufacturing Chemists Association of the United States; director, National Industrial Conference Board; chairman of board of Synthetic Organic Chemical Manufacturers Association of the United States; chairman, Northeastern section of American Chemical Society and trustee of the Permanent Trust Funds for the same; lecturer at M.I.T.; chairman, New England section, Society of Chemical Industry. Representing his Class on the Alumni Council, he is a member of the Corporation Visiting Committee on chemistry at M.I.T.



1891 Continued

"In 1895 at Bellows Falls he married Marcia Russell Sawyer. They have two children, Philip Sawyer Wilder, faculty member and alumni secretary of Bowdoin College, Brunswick, Maine, and Rachel, now Mrs. Harry Bliven." — HENRY A. FISKE, *Secretary*, Grinnell Company, Inc., 260 West Exchange Street, Providence, R. I. BARNARD CAPEN, *Assistant Secretary*, Early Convalescent Home, Cohasset, Mass.

## 1895

This issue starts the year of 1937. A simple request is made by your Secretary to have a few members at least contribute periodically to these news columns so that our fellow members may keep in contact with the doings of each other. While our next five-year reunion falls due in 1940 and we anticipate this gathering to be a greatly featured event, it would assist materially if we had a suggestion or two from the members as to how and where this great function should be celebrated. It is none too early to begin thinking and planning about this event. Your suggestions will at least make news.

We regret to report the death of W. Louis Chapman, VII, of 249 Thayer Street, Providence, R. I., on November 15.

Best wishes to all for a Happy and Prosperous New Year. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass. JOHN H. GARDINER, *Assistant Secretary*, Graybar Electric Company, 420 Lexington Avenue, New York, N. Y.

## 1896

Last month we left the Jacobs as they had arrived at Singapore, and now their story continues: "Singapore, the gateway to the Orient; England's naval base which she is feverishly strengthening; a city of half-a-million inhabitants, 90% Chinese, 6,000 Europeans, also Japanese, Indians, Eurasians, and what not; in the city, great piers, at one of which the *Empress of Britain* lay comfortably, and along which her passengers moved uncomfortably, hemmed in by great mountains of merchandise and importuned by noisy merchants; fine business blocks and parliament buildings, Chinese quarters with sumptuous homes, the governor general's palace and park, the fine botanical gardens with their simian inhabitants — such were the impressions which a morning on shore left. A drive into the country showed us great groves of rubber trees and flowering trees, flowering bushes — hibiscus, buginvillea, and so on — fields of sugar cane, primitive villages, and the greatest variety of transport coolies with shoulder poles, rickshaws, bicycles (a white-turbaned rider on one, with flowing robes streaming in the wind, caught our fancy but not our camera), motor busses, automobiles. A visit to Johore and its sultan's palace filled the remaining hours of our stay. . . .

"On Saturday, March 9, we crossed the line. Neptune rose from out the deep and held his impromptu court on the forward deck, hard by the swimming pool into which, after harrowing experiences with evil looking pills and nauseous con-

coctions, the luckless neophytes were plunged. Great fun — for the onlookers. Java was fascinating: a wonderfully fertile and interesting island, with contented natives, bountiful crops, and great plantations of rubber trees. Here I met Dr. Stehn, head of the Dutch Volcanic Observatory, and with him we visited one of the great volcanoes, recently active, and obtained a lot of data concerning volcanic Java with its 17 more or less active cones. — Although Batavia (six degrees, 15 minutes, south latitude) was too hot for comfort, Bandung, on the uplands, was cool and bracing. Splendid train service, an airplane line to Batavia, and fine roads added to our enjoyment and we left the island with real regret. — The Island of Bali, one of the newer ports of call for world cruisers and famed by the yarns of Halliburton and others, next received our attention. It is a beautiful, verdant isle, with great fertile plains surrounded by towering volcanoes, inhabited by a people who are perhaps less spoiled by contact with Western civilization than those of most places in the East. They live in walled villages and are primitive and contented. Their temples are novel and artistic and their dramatic dances most interesting. We found the famed Bali belles disappointing; fine physical specimens to be sure, but not comely — nor clean. 'And the clothing that they wore, was nothing much before; and rather less than 'arf as much be'ind' (with apologies to Kipling).

"And then we squared away for the Philippines, steaming up through the Java Sea, the Celebes Sea, and the Sulu Sea to Manila. We ran past Corregidor, our fortress guarding the entrance to Manila Bay, and then for 25 miles across the bay to the great pier, the largest in the Orient, where the constabulary band blared out a welcome, and some of my old students, engaged in engineering work in the city, waited to do the honors. They did them royally, taking us in their car out over the splendid boulevards and through the city, showing us the new Manila that Americans have created since 'Dewey was the morning upon the first of May and Dewey was the admiral, out in Manila Bay,' way back in 1898.

"But far too soon Manila and its heat were left behind and we were running into cold, rough weather in the China Sea, where passengers with delicate stomachs (or whatever it is that causes *mal de mer*) were conspicuous by their absence from the dining saloon. An appraisal of one's fellow passengers could fill many pages: a scion of the House of Rothschild — a very fat scion attended by his *belle amie* and other appendages — several English baronets, one of whom made sad business with his h's, though he fought manfully with them, French counts, Catholic priests, American malefactors of great wealth, to use T. R.'s phrase, and many others of various nationalities — 480 in all. About the only thing that such an assemblage had in common was the ship, fortunately a

very large one. The passengers quickly became divided into little coteries, each sufficient unto itself and each regarding another with hauteur and ill-concealed surprise that it could continue to exist. On remarking to one of another caste as we left Manila that the Captain was doing a wonderful bit of navigating in close quarters, he stared at me in pained surprise — you see we had never been introduced.

"And so on to Hongkong, Shanghai, and Peiping where we had a glorious visit to the Forbidden City, the Tartar City, and all the other 'cities' comprising this colorful place. Here I saw A. W. Grabau, who has made a great name for himself by his geological work in China. But the trip to the Great Wall was the climax of our visit to the Flowery Kingdom. Think of the vastness of the undertaking: to encompass a great country with a wall, 25 or 30 feet in height, massive yet graceful in outline, running across valleys and over low mountains for some 1,500 miles, pierced by massive gates and guarded by watch towers and soldiery; begun 220 years before Christ and finished in not much more than a decade.

"We left Chinwangtao, the port of Peiping, on April 5, and the next night in the Yellow Sea, I had a radiogram from Nobuo Yamamoto '19 inviting me to lunch with the Technology Club of Osaka on the 10th. I looked forward to this meeting with our Oriental Tech graduates but, alas, there had been a death on board and the lynx-eyed Japanese quarantine authorities took so much time feeling of our pulses and examining our thousand pairs of eyes (the ship's company numbered over 500) that we arrived in Kobe too late and I had to radio the Club my regrets. Soon came the reply: 'We are very sad and toast the vacant chair.'

"But in Tokyo we had better fortune and were the guests of the Tokyo boys at a dinner. M. Kametani '25 met us at the hotel and conducted us to the Mitsui Club where T. Mitsui '18, President of the M.I.T. Association, K. Goto '11, Y. Kubota '23, I. Wade, H. Yamada '10, and J. Okada '20, were waiting to receive us. We had a delicious dinner, with cocktails, warm sake, red wine, and liqueur — and good talk. Later Mitsui took me to the Imperial University and introduced me to the seismologist, Ishimoto, with whom I had a most interesting conversation about Japanese earthquakes. The boys drove us, later, to the Detached Palace, the new Parliament buildings, and other interesting places, and finally saw us off for Nikko. Altogether it was a red-letter day in our itinerary. We spent a most interesting week, in all, in Nippon, in spite of inclement weather: visited many places of interest and saw the country in the glory of its cherry blossom setting. But one must go many times to this delightful country if he would really know it.

"Once more the *Empress* turned her prow to eastward on the 3,400-mile run to Hawaii, and on Easter Sunday we

1896 Continued

crossed the 180th meridian and experienced the only eight-day week in our lives. Honolulu was an old friend, for we had spent three months there on a previous sabbatical, and for seven weeks we sojourned on these, to our minds, most delightful of all islands, renewing old friendships and reveling in the glory of the flowers and the scenery. H. P. Field '21, who was the president of the Technology Club of Hawaii, and S. T. Carr '06, the secretary, were at the boat to meet us and did no end of things to make us comfortable. At the Technology luncheon we met other old Tech boys, including Litchfield, who was on his way to Australia, probably to sell a Zeppelin or two. Honolulu hospitality is proverbial, and drives around the island, dinners, and picnics filled many entertaining hours. The United States Fleet came in from its maneuvers and the city swarmed with gobs, while overhead squadrons of airplanes flew in perfect formations, and at night the searchlights spread great ribbons of light across the sky.

"Dr. T. A. Jagger came over from the Big Island to speak at the Hawaiian Academy of Sciences meeting and I had a long talk with him about volcanology. Unfortunately Mauna Loa was biding its time against the great eruption of December, 1935, so that once more we were disappointed in not seeing this greatest of Hawaiian phenomena. We did, however, have a hundred-mile flight to Kauai, saw the Wimea Canyon and were entertained by one of the sugar planters on this garden island of the archipelago.

"Finally came the voyage on the *Aorangi* to Victoria and the trip to Seattle, where a new V-8 awaited us. The motor trip included a ride up the Columbia River, where we saw the Bonneville Dam under construction, to Spokane, from which we visited the Grand Coulee Dam, up into the Canadian Rockies, down through Glacier National Park, and across the mountains and plains to Duluth, where we took a steamer through the lakes to Buffalo, and so home. We were gone six months. We had traveled, by land and sea, some 30,000 miles, had crossed every meridian of longitude and we arrived home refreshed in mind and body and with recollections and experiences enough to last — till the next sabbatical."

Report has been received from the Myron Fullers covering the first leg of their trip from New York to Los Angeles. They had rather a wild time in a taxi trying to locate their boat at the pier in Brooklyn, but from that time on down the Coast and through the canal everything was fine. They were on a British freighter with a Scotchman for a captain and a crew mainly Chinese. This boat proceeds slowly, making various ports of call to take on and unload freight. The plan of their trip is to continue on to Manila and visit some of the main resorts of the interior of the Philippines, and then they will cruise through less-known islands of the archipelago, later

going on by way of Borneo, Celebes, New Guinea, and other islands, and the East Indies, to Australia, from where they plan to go to Bali, Java, and Sumatra, thence to Singapore, and then by train up the Malay Peninsula, with stops at the rubber plantations and tin mines, to Bangkok in Siam. At Bangkok they start on a motor trip across Indo-China, with a visit to the great ruins at Angkor Wat in Cambodia. Next they go by steamer to Rangoon and Mandalay in Burma, and then they will cross Burma to the Taj Mahal and Bombay. Next they will visit the Persian Gulf, ascend the Tigris River to Babylon and Bagdad, and go out to the Mediterranean across Syria, with a stop at Damascus. Using independent non-cruise ships, the trip will consume six or eight months. Incidentally they arranged to vote at the November elections by means of absentee ballots sent on by air mail. The question may arise in the minds of some of the readers of these notes as to whether their votes cut any figure.

Father Partridge continues to travel and to receive publicity. The Secretary was handed a clipping from the *Los Angeles Times* telling how Partridge had traveled 30,000 miles in 46 states, preaching and ministering in hobo camp and cathedral, and carrying on in his old automobile accompanied by his terrier, Spot, and doing everything without financial assistance.

Con Young and Abby flitted South at the usual time in the fall, and are at their former residence in Fort Myers, Fla., for the winter. — Charlie Nevin and Mrs. Nevin also are not taking any chances on a cold New England winter this year. They got an early start on October 13 for Florida, where they will make their headquarters at St. Petersburg, and will not return North until the flowers are again blooming in New England. — Everyone at M.I.T. is pleased to see Walter James back on the job again as professor in the Mechanical Engineering Department.

Classmates will be sorry to learn of the death of Mary S. Eynon, which occurred on November 1 in San Diego, Calif., where she and her husband had been living for a considerable period. Our sympathy goes out to Jack Eynon in his loss.

The death of Mort Sears was noted last month as having occurred in Washington, D. C., on October 26. This came as a shock to the Secretary, who had seen Sears apparently feeling so well in the latter part of the summer on his way back to Washington after his automobile trip with Mrs. Sears to Nova Scotia and Cape Breton. Sears was born January 5, 1873, at Athol, Mass., son of Charles M. and Annie J. Smith Sears. He married Maria Childress, and there was one daughter, Ethel, born April 29, 1907. As an undergraduate he was in the Tech orchestra and a member of K<sub>2</sub>S Society. For four years after graduation he worked in various western gold mines as pump man, engineer, and foreman. In 1901 he was superintendent for the Yukon Mining Com-

pany at Puzzler, Colo. The next year he was superintendent of the old pyrite mine at Davis, Mass., and then from 1903 to 1905 he was superintendent of a pyrite mine at Mineral, Va. The next year he was inspector on the Pennsylvania Railroad and East River tunnels. For eight years, beginning in 1909, he was mineral examiner in the United States General Land Office, and then for three years he engaged in private practice as an oil and gas geologist, with headquarters at Huntington, W. Va. In 1921 he went back as mineral examiner, and in 1924 he became assistant law examiner in the United States General Land Office, which position he held at the time of his death. This work involved judicial adjudication of mineral matters and was handled by Sears in a very able manner, so that he was looked upon as a competent, responsible, and popular man. Services were held in Washington, and interment followed under Masonic auspices at his old home in Athol, Mass. He is survived by his widow and daughter, who is now Mrs. Ethel Michelborough Weller of Washington, D. C.

Paul Litchfield was in Boston on November 20, and made a brief call at M.I.T., where it was the Secretary's misfortune to miss personal contact with him. The Boston papers carried reports of an interview with Paul in which he told something about the problems of the Goodyear Company and the progress that the company is making, including some of the political aspects and industrial programs.

Walter Stearns favored the Secretary with a note during November in which Walter reported that he had made a trip to Indianapolis. He tried to get in touch with Joe Stickney there, but Joe was out of town, and when he tried to make contact with Wayne the latter was so busy that he could not be seen. The reason was that Wayne is president of the Indianapolis Association of the M.I.T. and also Honorary Secretary of M.I.T. for Indianapolis, and Professor Thresher '20, the Admissions Director of M.I.T., was visiting Indianapolis at that time. There was a meeting of the Club in the evening, and Thresher was being taken around by Wayne during the day that Walter was there. Walter said also that Paul Litchfield had been in Schenectady early in September to give an address over the General Electric broadcasting station, WGY, as part of their regular Friday night feature called "The Farm Forum." Paul dealt very finely on the use of rubber in various forms on farms. Walter had a group of the older Tech men in Schenectady for a luncheon with Paul, and also a dinner for him with a number of the executives prior to the broadcast, and Paul spent the whole day in Schenectady and got a good visit to the laboratories and manufacturing plant. Walter also disclosed that John Rockwell visited Schenectady last summer and got trimmed in a game of golf, although Walter admits that there was some excuse for John, because John had to play with borrowed clubs.



A note was received by the Secretary from Charlie Hyde in California, but not a word did he contribute in the way of news about himself, or any other member of the Class. Anyone who knows Charlie appreciates that he is doing something all the time, and he might at least loosen up a little bit and tell us a few of his activities.

A letter from Jacobs in November told of a recent trip to Montreal which is only 100 miles away from Burlington, Vt., so that it forms a good place for a good dinner, with everything that goes with a good dinner, and makes a pleasant diversion in the round of work. He and Mrs. Jacobs spent a week during the summer at Nantucket, which he had never previously visited, and on top of that they made a run around Cape Cod and Plymouth. Jacobs reports that he sees Moat every so often, and Moat is looking well and energetic. He is health officer of Vermont and is setting a good example to the inhabitants of what a good healthy man should be. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge, Mass.

## 1901

According to class records which came to me from previous Secretaries, there were, during the four years we sojourned so interestingly in the neighborhood of Boylston Street and Trinity Place, Boston, some 419 members connected for longer or shorter periods with our Class. Of this membership 83 have passed on from this sphere of toil and strife to a place where perhaps engineers are more appreciated than in this present world. In any event we have not heard from them since, nor have we heard for some time from an additional list of 45 men for whom no correct addresses are at present available. There are, in addition, some 13 more who, although they were originally '01 men, prefer for reasons of their own, which we trust are good, to affiliate with either '00 or '02. If, therefore, these notes come to the attention of any of these men who may be interested and will advise their Secretary of their present address, they will again be placed on the mailing list to receive such annual letters, and so on, as may be prepared for the faithful of our Class, who now, including our lady members, total 278. Furthermore, of this list of 278 I am glad to advise that since the annual letter was released on September 19, 46 have either sent in the data sheets for class news or, in a few cases, have written letters. Of this 46, 22 were not heard from during 1935, and, conversely, 12 of the men who wrote during 1935 have not been heard from since that year, but I hope they are intending to be heard from some time soon.

The data sheets have generally not been very full of news; however, something of interest has usually been given and as space permits in future editions of *The Review*, I will include items in the order in which they were received. Be-

fore starting, however, mention must be made of the death on August 15 of Frederick J. Dulude, I. Notice was received from Mrs. Dulude, through the Alumni Office, and no comments were made, so we will be glad to receive further notes regarding Dulude which would prove of interest to other members of the Class.

Howard Wood, who formerly was connected with the General Electric Company of Schenectady, notes briefly on his data sheet that he is now retired and living at 101 Union Street, Rockville, Conn.

— Ralph Whitman, who is a captain in the civil engineer corps, United States Navy, advises that since July, 1934, he has been on duty in the Bureau of Yards and Docks, Navy Department, Washington, D. C. He states that this bureau has cognizance of the Navy's shore station construction and maintenance, and I judge that if any of the fellows are in Washington, he would be glad to receive a visit from them, and no doubt could make such a call very interesting.

L. D. Chandler and Edward P. Beckwith, who respectively are domiciled in Boston and in Garrison, N. Y., sent in their data sheets with the brief comment: "no change." — Ted Lange advises that he is now interested in real estate in Springfield, Mass., and I look forward to making a call on him the next time I am in that vicinity. — Alexander J. Taylor briefly gives his occupation as being both the president of the Delaware School Auxiliary Association and the Delaware School Foundation and also executive secretary of the Delaware Liquor Commission. That all sounds very interesting, and we, therefore, wish that we could know a little more about the operations of those various interests. — Phil Moore advises that he continues to be first vice-president of Poor and Company of Chicago, and I judge expects to broadcast any interesting news when we are next so fortunate as to meet.

Robert M. Derby gave no news at all on his data sheet, but I believe that he continues to be the vice-president in charge of the foreign business of the Niles-Bement-Pond Company with headquarters at 111 Broadway, New York City; his company has recently removed its manufacturing facilities to East Hartford, Conn. — Ed Davis, who continues to be connected with the Scovill Manufacturing Company of Waterbury, Conn., is very much interested in promoting the merit system in conjunction with the employment system of our government. There is certainly room for improvement and Ed is to be congratulated because of the interest he is taking in the subject. — Farnum F. Dorsey shows very little on his data sheet, but the envelope in which it was enclosed indicated that he was still living at 205 Garfield Place, South Orange, N. J., and I judge that he is continuing as a trade-mark and patent counsel at 26 Broadway, New York City.

William E. Farnham also lives in one of the Oranges (Hotel Alvord, East Orange) and continues to be connected with the American Telephone and Telegraph Company as traffic facilities engi-

neer. — Philip A. Potter, who lives at Hohokus, N. J., advises that as a consulting engineer for both private and municipal water supply and sewage disposal projects, he is open for the consideration of such propositions in any part of the country. — S. W. St. Claire, who continues to make his headquarters as an architect at 120 Boylston Street, Boston, has recently been very much occupied with the completion of a 600-room hotel in Miami, which was started but proved unsuccessful years ago, although now chances for success appear most promising.

These news items will be continued in future class notes and in the next two editions I hope to include some interesting notes regarding Miss Anna Billings Gallup, who is curator-in-chief of the Brooklyn Children's Museum. I shall include also information relative to a most exciting *safari* which was undertaken by R. R. M. Carpenter, Vice-president of du Pont de Nemours, into the wilds of Africa. — ROGER W. WIGHT, *Secretary*, 700 Main Street, Hartford, Conn. WILLARD W. DOW, *Assistant Secretary*, 20 Beacon Street, Boston, Mass.

## 1902

Kellogg was chosen, last June, as president of the Edison Electric Institute, which is the trade association of the electric light and power industry. This organization is the successor of the former National Electric Light Association. Bill modestly states: "No one has ever been able to explain why I was elected, unless it was to get some one who was entirely unknown and who, therefore, would not embarrass anyone else in the industry." Confidentially, we suspect that the little bird who whispered in our ear that Bill was the most effective witness for the power companies when the Holding Company Bill was before a Congressional committee last winter had something to do with the selection of our classmate. If he flew around and told others what he told us, Bill's election was assured.

The Secretary of the Institute determined that whatever ignorance the members of that body may have had before regarding their new President should be dispelled, and published a sketch in the bulletin of the Institute from which we quote, in part: "Charles W. Kellogg, newly elected President of the Institute, has devoted his entire business career to the public utility industry. He has served, since his graduation from M.I.T., with Stone and Webster or affiliated organizations, acquiring an unusual breadth of experience in the three main branches of the utility business—operating (both hydro- and steam), finance, and engineering." The sketch then traces Bill's career from birth through the Institute, where, as most of us know he was "S.B.'d" in 1902 and as some of us know was also "S.M.'d" in 1903. Then he was associated with Stone and Webster in Brockton, then went to El Paso, where he eventually stretched his sway over other parts of

1902 Continued

Texas, thence to Keokuk, where he made that famous development a business success, as it already was an engineering success. Next the sketch brings him back to Boston where he was in charge of important reports and appraisals, such as those of the Interborough Company in New York and Conowingo Dam on the Susquehanna. In 1925 Kellogg became president of the Engineers Public Service Company, which post he held until two years ago, when he became chairman of the board of this Stone and Webster affiliate. We cannot see much that the sketch omitted, except that Bill was Secretary of the Class for some years, both undergraduate and graduate.

We believe that there was no subtle connection between the coming of this further honor to our classmate and the fact that he was hurried to the hospital a few weeks after his election for an emergency operation for appendicitis. Classmates will be glad to know that, after a few days of anxiety for his friends, Bill's good health and sane life asserted themselves, and he has made a good recovery.

Farley Gannett (Gannett, Eastman and Fleming, Inc., engineers of Harrisburg, Pa.) writes: "I don't see many Tech men down here: Frank Robbins is the only classmate in this vicinity. Lester Hammond came into our office a few months ago; he has a WPA job in Washington, and Pennsylvania comes under his supervision. Most of our work has been WPA and PWA for the last few years, so that we, like most everyone else, have been living more or less on Uncle Sam. We are beginning to get some private work and things look more promising. Our organization has recently taken on the representation for most of Pennsylvania of the Westinghouse air-conditioning equipment."

Farley reports that he is twice a grandfather: His oldest daughter, Muriel — Mrs. Dwight Ludington of Harrisburg — has a son, Farley Gannett Ludington, now nearly three-and-a-half years; his second daughter, Jane — Mrs. Seaborn T. Whatley of Little Rock, Ark. — has a daughter, Elizabeth Farley Whatley, born last March. Farley's third daughter, Alice, is in the senior class at Ogontz Junior College, near Philadelphia, Pa. Farley adds this interesting bit: "I'll bet that there was nobody else in our Class who had two houses submerged in the floods this spring. Our town house on the bank of the Susquehanna, where we were living at the time, had nearly three feet of water over the first floor. Richardson of the *Engineering News-Record* was visiting me at the time to get first-hand dope on the Susquehanna River floods, and he got it, as we were surrounded by water for 24 hours and finally got out in a boat. The house was not much damaged, but some of the furniture was. At the same time our country house, about 15 miles down the river, was surrounded by 10 feet of water with four feet over the first floor. It took us till July to get both places cleaned, straightened, painted, papered, and fixed up again.

"I apparently haven't started to disintegrate completely yet, because I have just returned from a solid week of fox hunting on horseback behind hounds. We took them out about 20 miles in the wilds and lived with them, hunting almost every day through the woods and over fields, streams, and fences. It was grand sport, but I slept 14 hours last night to make up for it."

Lou Cates has also qualified for our increasing list of grandfathers: A daughter, Julia, was born to his daughter, Barbara — Mrs. R. C. Wilkin — on the 4th of July last. This event was celebrated all over the country. A few weeks before this happy event the Michigan College of Mining and Technology conferred the degree of doctor of engineering on Cates. Somehow we can't quite picture any classmate calling Lou "Dr. Cates" or even "Doc." However, you might try calling the president of the Phelps Dodge Corporation "Grandpa."

Long before this reaches your eyes you should have received the first notice of the 35th reunion of the Class, due next June 11 to 13. If you failed to get one, write immediately to the Class Secretary. Just picture the joy (to us) of seeing — after 30 years — a class notice without our name at the end of it. We are looking forward to receiving many letters from classmates to report that they will be on hand for this event. May it be the largest assembly ever. — FREDERICK H. HUNTER, Secretary, Box 11, West Roxbury, Mass. BURTON G. PHILBRICK, Assistant Secretary, 246 Stuart Street, Boston, Mass.

## 1903

Class news for this month is particularly small in quantity. The following note has been received from the Alumni Secretary as a clipping from the *Journal of the American Society of Testing Materials* about Pulsifer, V. He has been made director of the research laboratory, Cleveland district, American Steel and Wire Company. "Best known perhaps for his contributions to technical literature and activities during the past eight years in his position as metallurgist for Ferry Cap and Set Screw Company, Mr. Pulsifer nevertheless has an extensive teaching experience behind him at such places as Armour Institute of Technology, Montana State School of Mines, and Lehigh University." Last year he was chairman of the Cleveland Chapter and is now on the executive committee.

The Secretary, in glancing through the new directory of the Alumni Association, finds that only two other members in the Class are active in alumni affairs to the extent of being officers in the various activities: F. W. Garber was elected a term member of the Corporation, his term expiring in June, 1941; and J. F. Ancona continues as the honorary secretary in the Rochester, N. Y., district. These Honorary Secretaries are "appointed by President Compton to act as academic ambassadors of the Institute in their communities." There are Honorary Secretaries scattered all over the United States, in its territories and dependencies,

and in 17 foreign countries. — FREDERIC A. EUSTIS, Secretary, 131 State Street, Boston, Mass. JAMES A. CUSHMAN, Assistant Secretary, 89 Broad Street, Boston, Mass.

## 1905

Ros Davis' record for continuous monthly notes for The Review was broken in the December issue partly through the present Secretary's inability or failure to drag out news and partly due to a like failure of about 400 Assistant Secretaries. Thankfully your Secretary offers as an alibi the fact that business demands have interfered with extracurricular duties and hopes the same is true of you. At the same time inertia is also to blame. If about 15 Assistant Secretaries per month will shake off their inertia, depart from their smugness, or steal a bit of the boss's time to furnish news of themselves or their classmates, your Secretary promises no further lapse.

The most important bit of news since our last insertion concerns the George Bayard Jones Testimonial Hour held at Blue Ship Tea Room down on the end of T Wharf, Boston, on Saturday afternoon, October 10. George was in the Hub for the wedding of his son, which took place at Danvers, Mass., the night before. Hub Kenway succeeded in dragging George away from the postfestivities. Because of the general exodus from Boston for the long Columbus Day week-end, many of the regulars were unable to attend, but for quality and good fellowship, the testimonial was an enjoyable success. Carroll C. Curtis, IX — back from a sojourn of several years at Peaks Island — Andy Fisher, Henry Buff, Hub Kenway, George Bayard himself, and the Secretary made up the select party. George responded to the toasts with his well-known nonchalance, told a few stories, did his favorite sleight-of-hand trick, and bore his honors gracefully. Gammons dropped in at Kenway's office before the "big six" left for the eats just long enough to say "hello" to our guest from Chicago.

Lovejoy, in expressing regrets at his inability to attend, gloried in the fact that when the story of the event appeared in print he would again be basking on the Gulf Coast "where the sun shines every day and you do not have to wear fur coats and a hundred pounds of clothes to keep from freezing solid." Writing these notes on the day of the first winter's snowstorm makes us envious, as Roy is undoubtedly already doing his basking. Another regret, expressed by Bill Morter's New York secretary, told that Bill was in Chile for a two months' visit.

Clarence Gage, II, has moved again — perhaps just another step in his hitchhiking tour. His latest address is Snell Isle, Apartment 2, St. Petersburg, Fla. If our letters or The Review ever catch up to him, perhaps we'll learn whether it's still vacation or a new vocation. — George G. Wald, III, is now located with the Arizona Magna Mining Company, Chloride, Ariz. — Joe Brown, II, writes that he is with the Worthington Pump



1905 Continued

Company, 400 West Madison Street, Chicago, but whether this is just a sign of life or an announcement of a new business connection isn't quite clear. Perhaps Joe will enlighten us, also tell us more of his recent history, family news, and so on.

Arthur P. Gerry, II, for years at Troy, N. Y., has changed his address to R. F. D. No. 4, Laconia, N. H. Since this is Arthur's old home town, it's a question whether he has retired as a gentleman farmer or what. — New York Secretaries, please take notice: William H. Lalley, XI, whom we have been trying to locate for a long time, at least has an address: 101 Park Avenue, New York City. — Captain Clayton M. Simmers, XIII, announces his resignation from the AAA and is living at the Riverbank Court Hotel, Cambridge, Mass. — FRED W. GOLDTHWAIT, *Secretary*, 175 High Street, Boston, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 209 Washington Street, Boston, Mass.

## 1907

In the last Review we included a newspaper statement regarding the death of our classmate, A. G. Labbe, but now we have the more personal, and consequently more interesting, message from Mrs. Labbe written on November 8 from 2941 North West Quimby Street, Portland, Ore.: "I am sorry not to have answered your kindly note of sympathy long before this, but I hope you will understand that I am truly appreciative. My husband, on graduating from M.I.T., was with the Portland Gas and Coke Company for about a year, in the engineering department. He left there to go into the Willamette Iron and Steel Works, also in the engineering department, and in a few years he became the president. With our two daughters, Elizabeth and Marguerite, we spent two years in Europe, 1927 and 1928, as Tony had been working too hard and his doctor insisted on a complete rest and change of scene. We came home in 1929, and Tony undertook the presidency of the Willamette Iron and Steel Works again, which he held until he had a severe coronary thrombosis in 1930 in the autumn. From then on he was a semi-invalid, unable to be active in business or in any other way. He had frequent heart attacks, but in spite of them was philosophical and enjoyed life and his many friends. He took a three months' trip to the Orient about three years ago, which he enjoyed thoroughly.

"His clubs were: University Club, the Arlington Club, Waverley Golf Club, The Multnomah Amateur Athletic Club, and the Highlands Racquet Club, in most of which he served on the board at one time or another. Our daughter, Elizabeth, 22 years old, is at the Katharine Gibbs Secretarial School in Boston this year. Our daughter, Marguerite, is a junior at Mills College, California (she is 19)."

In the Boston *Herald* of October 25 appeared the photograph of Mrs. Donald Goodrich Robbins, Jr., formerly Anne

B. Patrick of West Newton, Mass., who was recently married to the son of our classmate, Don Robbins. Don, Jr., is a graduate of Dartmouth and is now doing graduate work at Tech.

Through the courtesy of Carl Trauerman we have a page from the *Montana Oil and Mining Journal* of November 7, which gives completely a speech on the Federal Securities Act of 1933 that Carl made in October at the Denver, Colo., convention of the American Mining Congress. Carl is president of the Mining Association of Montana, the Ruby Gulch Mining Company, Basin Goldfields, Ltd., and the Montana Stock and Bond Company. Though a very busy man, he is never too busy to take an active interest in '07 affairs, through correspondence and financial support. Would that all our classmates would follow his example! In a recent letter he says: "Being a Roosevelt Democrat, the election naturally pleased me. I made a number of speeches during the campaign here." He hopes to attend our 30th reunion next June.

Changes of address without any further comment are uninteresting reading, but the four that follow may be of value: Henry C. McRae, Veterans Company 2415, C.C.C., Mulberry, Fla.; Frank W. Poland, Pocasset, Mass.; Cornelius S. Fleming, 5450 West Boulevard, Los Angeles, Calif.; William L. Woodward, Barium Stainless Steel Corporation, 1502 Allen Avenue, South East, Canton, Ohio.

Remember our 30th reunion, June 4 to 7, at Oyster Harbors Club, Osterville, Mass. — BRYANT NICHOLS, *Secretary*, 126 Charles Street, Auburndale, Mass. HAROLD S. WILSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

## 1909

During the summer and fall Carl Gram was again in Boston, but in November he returned to London, England, where he expects to be located this winter. His London address is 62 Rivermead Court, Hurlingham, S.W. 5, London, England. He hopes that if any of the Class are in England they will communicate with him. His telephone number at the address above is RENOWN 3766.

Miss Florence H. Luscomb was a candidate for Representative in Congress from the ninth district of Massachusetts, but was defeated in the recent election. For many years Miss Luscomb has taken an active part in politics, being a leader in the fight for woman suffrage and the first woman candidate for the Boston City Council. At present she is president of the Stenographers, Typists, Bookkeepers and Assistants Union, Local 14965, and is a member of the executive board, Boston Woman's Trade Union League.

Charles R. Main has been elected a member of the board of overseers of the Thayer School of Civil Engineering, Dartmouth College. — CHARLES R. MAIN, *Secretary*, 201 Devonshire Street, Boston, Mass. *Assistant Secretaries*: PAUL M. WISWALL, MAURICE R. SCHARFF, New York; GEORGE E. WALLIS, Chicago.

## 1910

Horace S. Hinds is still in the chocolate business and he is now associated with Rockwood and Company of Brooklyn, N. Y. He says: "It does seem strange, but sooner or later most of us evacuate New England, beautiful and homelike as it is." — Allen Curtis is still in Boston with the Boston and Albany Railroad and is seen regularly every evening hurrying up Federal Street for the North Station on his way home to Gloucester. Whereas Allen Curtis is seen every evening, Albert Huckins greets your Secretary about every morning on Devonshire Street.

Louis O. French has three daughters in college: one taking graduate work in philosophy at Brown University; another, a junior at Lake Forest College, Lake Forest, Ill.; and the third, a freshman at Milwaukee-Dowder College. His fourth daughter is a junior at Riverside High School, Milwaukee. — B. M. Pettit, assistant director of United States Housing, was quoted in the *New York Times* on Sunday, November 22, on the need for small houses in this country. — Dud Clapp, who is in the business of manufacturing textile oils and chemicals, is expanding, which necessitates moving to a large plant before the end of the year. — HERBERT S. CLEVERDON, *Secretary*, 46 Cornhill, Boston, Mass.

## 1911

As a direct aftermath of our highly successful Silver Anniversary Reunion at Plymouth came the suggestion this fall that we have two parties on the 11th day of the 11th month, and so while 14 classmates gathered at Walker Memorial, M.I.T., eight of the wives gathered at St. Clair's in Boston and two enjoyable dinner parties ensued. The ladies' dinner was conceived by and in charge of Esther Loud and Mabel Herlihy, the others attending being Mesdames Batty, Clark, Comstock, Denison, MacPherson, and Meisel. At the Silver Room in Walker we had Ernest Batty, Oberlin Clark, Marshall Comstock, George Cummings, Denie, Jack Herlihy, Roger Loud, Charlie McManus, Roy MacPherson, Otto Meisel, Carl Richmond, Suren Stevens, O. W. Stewart, and Alec Yereance. It was the consensus of opinion that we should again have a ladies' night of the Class early in 1937.

For a number of years Kester Barr, II, has been with the American Nickeloid Company, making his headquarters in Columbus, Ohio, but we learn that he has recently transferred his headquarters to 804 Crosby Building, Buffalo, N. Y. From New York City comes word that Royal Barton, VI, for many years with Electric Bond and Share Company, is now affiliated with one of its associates — Ebasco Services, Inc. — with his office still at 2 Rector Street. Two other new addresses are: J. Burleigh Cheney, II, 12 Sea View Avenue, Edgewood Station, Cranston, R. I., and Samuel L. Hayes, V, 2139 Norton Road, Charlotte, N. C.

1911 Continued

Speaking of Charlotte, Carl Richmond told us at the class dinner that he had breakfast at the Hotel Charlotte the first Sunday in November with Henry Dolliver, I, who was there "for the *n*th time starting another perpetual reappraisal of the Duke Power property in the Carolinas." — Also at the dinner we learned that Roger Loud, VI, long interested in the telescopic art, is now vice-president of the Amateur Telescope Makers of Boston. Roger told us a bit of the numerous telescopes he and his sons have made. He also read an excerpt from a recent issue of *Water Works Engineering* which paid a glowing tribute to Bill Orchard, XI, who was entertainment chairman for this fall's New York convention of the New England Water Works Association. The editorial comment was: "As was to be expected, everyone had a good time under 'Bill' Orchard's leadership."

Harry Waterfall, II, has left Long Island and is now in Baton Rouge, where he is a professor of mechanical engineering at Louisiana State University. Another recent change takes Leland Wood, VI, away from Hudson, Mass., where for many years he has managed the municipal light and power plant, to Norwich, Conn., where he will manage that city's gas and electrical department.

On November 19, it was my extreme pleasure to have Bill Warner, I, and his wife stop here *en route* from Boston to New York in the midst of an auto trip of several thousand miles. We three had lunch together and what a grand renewal of acquaintance we had in the all too short time we were together. Bill, you know, has been in oil out in Nowata, Okla., for many years and is an ex-mayor of the city. The last time I saw him was nearly ten years ago, when he came to Kansas City during one of my visits there as Alumni Secretary. He and his wife have three boys, two of them now at the University of Missouri and one at Shattuck School in Minnesota. This current trip has taken them to Sault Ste. Marie, Callander, Ont. (where they were fascinated by the Dionne quintuplets), Toronto, Montreal, Quebec, Boston, Worcester and thence to Long Island, New York City, Titusville, Pa. (Bill's birthplace), Washington, and, early in December, back home to Oklahoma.

It will be Christmas week when you first read these notes and to every one of my readers may I express sincerest holiday greetings and best wishes for the coming year — a year we hope will be brightened by many responses to the "Write to Dennie" appeal with which we close. — ORVILLE B. DENISON, *Secretary*, Hotel Bancroft, Worcester, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford, Mass.

## 1912

Twenty-fifth reunion plans are underway, with Professor E. H. Schell and your Secretary as co-chairmen. Regional chairmen will soon be appointed and plans will be broadcast as soon as possible.

Save the first week of June for a trip back to Boston, to see how well we have all weathered the last 25 years. You will be surprised — pleasantly, we hope. — Miss Esther W. Schell, daughter of Professor and Mrs. Schell, was presented recently at a tea given at the Cambridge Boat Club. She is a graduate of the Cambridge School at Kendall Green and is now a freshman at Radcliffe College.

E. C. Holbrook, I, who has been out in the Philippines for several years, is enjoying a six months' leave of absence back in the States. Although spending much of his precious time with relatives in his home town, Montello, Mass., he has been in New York also, and has visited with your Assistant Secretary. Holbrook is a representative of the Republic Steel Company, in Manila, P. I., where he has been an interested observer of the trend of events connected with the establishment of the independence of these former island possessions of the United States. This independence program is going through a ten-year transition period, as perhaps you know, before all ties are completely severed with our nation. Holbrook has used his present vacation as an opportunity to visit the Central European countries — Germany, Austria, and Hungary — on his way back to the States. His address here is 41 Albion Street, Montello, Mass., and after the first of the year when he returns to the Orient, he can be addressed care of the Pacific Commercial Company, Manila, P. I.

Jesse F. Hakes, I, was another welcome caller recently. In New York on a combination business and pleasure trip, he dropped in for a little chat. His tool business in Baltimore is enjoying satisfactory progress along with the general upturn in business. Hakes is looking forward to attending our 25-year reunion in June. He reports visiting with David J. Guy, I, at the latter's home in Washington, D. C., and tells us that Guy, too, is hoping to join us in the reunion. — A business letter from Emery L. Lasier, I, Vice-president of the Titanium Alloy Manufacturing Company, at Niagara Falls, N. Y., also included a brief personal note to the effect that he and Mrs. Lasier had dined with Mr. and Mrs. Lester M. White, X, recently at the latter's home in Niagara Falls. — FREDERICK J. SHEPARD, JR., *Secretary*, 125 Walnut Street, Watertown, Mass. DAVID J. McGRATH, *Assistant Secretary*, McGraw-Hill Publishing Company, Inc., 330 West 42d Street, New York, N. Y.

## 1913

Bill Brewster has suggested that the Class be notified of the change of presidents which occurred last June. Pa Ready is the new president and Bill is the retiring one. — I had a nice letter from E. D. Pratt, I. He is at Winnipeg, Canada, and has charge of a concern which specializes in dining room and kitchen equipment. For a number of years Pratt was with Childs' restaurants. His avocation is his work with the "International Mind Fellowship." The I.M.F. is a league of experienced thinkers on world

problems, who believe in the chief tenet of the Briand-Kellogg pact. I have read the circular covering object and general plan and can assure you that their cause is as interesting as it is worthy. I can highly recommend your consideration of the I.M.F. if you should have the opportunity to meet any of its members or read any of its literature.

Bob Weeks, VI, has a very interesting job on his hands at West Chester, Pa., where he is president of the Wind Turbine Company. His product is a wind-driven electric power plant. The windmill part is unusual in that it has only one blade, made of stainless steel, of airfoil section and spot welded. The unit is complete for the production of alternating current at 110 volts. There is a bit of a human-interest story behind this development: On his return from Buenos Aires, where he had been in charge of the new subway electrical installation, Bob arrived in Philadelphia at the height of the depression. Instead of competing with his fellow electrical engineers in that section for the few jobs which existed, Bob devoted himself for quite a while to collection of funds for the relief of electrical engineers. He did this as long as he was financially able and then turned to the development of the device which I have just described. Personally I know no man who has shown more altruism in his nature than Bob Weeks.

Arthur Kenney, Ph.D., is a research chemist for Du Pont at Wilmington. His wife was formerly Marion Coes '18 and they have two interesting children. Arthur's work carries him into the realms of purest science and during his spare hours he blows faithfully on the clarinet.

I wrote beseeching letters for class news to Larry Hart and Joe Strachan. Apparently they could not spare even a few moments from their respective roofings and linoleums to help this news-needy column. Nothing daunted I shall pounce on several other classmates shortly before the next batch of notes is due. — FREDERICK D. MURDOCK, *Secretary*, 234 President Avenue, Providence, R. I.

## 1914

These notes are being written at the conclusion of a six weeks' trip to the Pacific Coast, and, if there is any one thing outstanding in your Secretary's mind, it is the desirability of having every classmate keep your Secretary informed of address changes. While it was obviously impossible to call on every man along the route, an attempt was made to locate as many as possible, often with the discouraging result of "moved — address unknown." At this point let me apologize for not contacting more classmates, but in such a hurried trip time just did not permit.

The trip out was made by boat through the Canal and was delightful, although it ended abruptly at Los Angeles instead of San Francisco because of the shipping strike. The trip up California was then made by train. While in San Francisco there was held a joint meeting of the four



1914 Continued

Founder Engineering Societies in connection with the bridge dedication. There your Secretary met several Technology men through the courtesy of George Whittle '08, who acted as his host on the bridge inspection trip and at the dinner. By prior arrangement L. Standish Hall joined the group. Hall has recently been promoted to the position of hydraulic engineer of the East Bay Municipal Utility District, with headquarters at Oakland. His work consists of getting a water supply from the mountains down into the cities of the East Bay District. Water seems to have agreed with Hall — an unusual '14 experience — because he weighs 225 pounds, thus almost joining Dean Fales's class, that is, in weight, not water. Hall has two daughters, 11 and three years, and a ten-year-old son.

Your Secretary talked also with Charlie Maier, who is with the Bureau of Mines at Berkeley. In true Californian style Charlie also weighs well over 200 pounds. He reported that he had been married for three years; thus slowly but surely our short list of class bachelors is disappearing. — Unfortunately, E. D. Hayward, who is with the C. E. Bedaux Company, was out of town for several weeks on an efficiency project. Arthur Todt could not be reached on the telephone, and it was reported that Deac Barns had gone back East.

In Los Angeles your Secretary saw Henry Gardner, Carl Sanborn, and Jim Holmes. There were several other classmates in the general district, but distances were so great there that "adjacent territory" means anything up to 100 miles. Your Secretary was particularly sorry not to have seen Donald Douglas, but the pressure of other appointments prevented it. Douglas has a large and rapidly expanding modern plant that is one of the show places just out of the city. Although passed by out of business hours, it appeared to be humming with activity and was reported to be working on a 24-hour basis.

Henry Gardner appeared prosperous in the oil industry, where he is located with the Petroleum Equipment Company. He was as genial as ever and greatly lamented the fact that your Secretary could meet him only for luncheon. These Los Angeles people have the welcome sign out 24 hours a day. Just to prove it, because no other time was available, Jim Holmes came in to the city to join your Secretary for breakfast. Jim is of the firm of Holmes and Narver, consulting engineers doing industrial power plant and structural work. Their principal activity for the past few years has been a very extensive program of studying, and strengthening where necessary, municipal buildings, such as schools, and so on, from an earthquake viewpoint.

Carl Sanborn, who is also in the consulting engineering business, was just the same old Carl, busy as the proverbial one-armed paper hanger with the itch. Carl has done the heating, ventilating, and other engineering work on a long list of the most prominent structures in and around Los Angeles. One of the most interesting of these is Grauman's Chinese

Theater. It was in this theater your Secretary had the pleasure, thanks to Buck Dorrance, whose company was sponsoring the program, of seeing a typical Hollywood preview, with much of "movie-stardom" present, followed by the enactment of the Hollywood Hotel radio program. — No classmates were found in the Grand Canyon or in Houston, Texas. At Austin your Secretary had the misfortune of missing Ralph Goeth, who is vice-president of the Tips Engine Works. Several telephone calls around the city from Ralph's office just failed to catch up with him.

The real disappointment came at Dallas, where your Secretary had agreed to meet Dean Lobdell '17 to attend a dinner of the Technology Club of Northern Texas. Not a classmate showed up. Later investigation revealed these facts: The class lists showed three men in the city — Bill Brotherton, Richard Peatross, and Charlie Olesen. At Olesen's former business address they said that they thought he was in Tulsa, Okla., but were uncertain. Repeated calls at Peatross' house by telephone brought no response, and Bill Brotherton could not be found listed in the telephone directory. To make up for this disappointment C. W. Ricker, professor of electrical engineering at Tulane University at New Orleans, did his best — and succeeded — in cheering up your Secretary. A most delightful visit was made to New Orleans, including a trip up to Baton Rouge. Major Burnham, the only other classmate formerly listed in New Orleans, has recently been transferred to Washington, D. C. Burnham is one of the few men who promptly notifies your Secretary of address changes. Ricker is very active in local engineering matters and heads a fine department at Tulane.

A final stop was made at Maxwell Field, Montgomery, Ala., to see Alden Waitt, who has recently been promoted to a majority in the Chemical Warfare Service. Alden is stationed at the Air Corps Tactical School for study and is doing considerable flying as navigator or observer. In addition to his official duties, he is taking part in Montgomery dramatic activities and recently took a prominent part in a play sponsored by the local Little Theater movement.

Dean Fales recently broke into the headlines by contesting the Social Security Act. This was done by bringing suit in Boston to restrain the directors and officers of a Massachusetts corporation from complying with the Act. The case has not yet come up for trial. — Alfred W. Devine, assistant registrar of motor vehicles of the Commonwealth of Massachusetts, spoke before the November meeting of the New England section of the Society of Automotive Engineers on the subject of safety as it relates to present-day headlights and brakes. Devine has become a national authority on this subject. Dean Fales is the scheduled speaker for the December meeting, on the subject of design changes in 1937 cars.

Classmates reading the November issue of *Fortune* noted with great pleasure that our President, Buck Dorrance, was one of

that select group of chief executives of national corporations selected by *Fortune* as representing famous Technology graduates in industry. They were equally pleased to see included in this list of great names Donald Douglas, President of Douglas Aircraft Corporation. For a Class out less than 25 years we can feel quite proud that two of our members were included in such a select list. — H. B. RICHMOND, *Secretary*, General Radio Company, 30 State Street, Cambridge, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York, N. Y.

## 1915

It is sad to record the passing of our classmate and good friend, Joseph F. Phelan. This brings to the members of our Class the deepest and sincerest sorrow. Joe was the laboratory director at H. P. Hood and Sons, Inc., Charlestown, Mass., where, I believe, he had worked since graduation. Joe died suddenly from a heart attack on November 3. He leaves his widow, Mrs. Edith Phelan, and a two-and-a-half year old daughter, Hope. They are living at 18 Garland Street, Melrose, Mass. Joe was interested and active in milk and dairy bacteriological societies and only recently had become a lecturer at the Institute. Everyone recalls Joe's pleasing personality and dry sense of humor at the class dinners, and, of course, we can never forget Joe's catching on the ball club at the big reunions. We take pride in recalling his enthusiastic and loyal devotion and service to our Class. On behalf of our Class I sent flowers and attended Joe's funeral. To his family we tender our sincere sympathy for them in their loss and grief, and express the hope that they will find comfort, as we do, in the recollection of his honorable career.

I knew Joe so well personally that I haven't much spirit for many other notes this month. However, Andy Wardle, XI, was here this fall, visiting his family in Dedham. I was unable to see him, but he left a message to be remembered to all the Class. — Time marches on and we must begin to realize that we are getting older. Already there are two children of classmates at the Institute: Young Bob Schmucker was reported last year in the notes as a freshman, and now Margaret Willis, daughter of San Willis, III, is a freshman. I understand this young lady is a popular coed, and, even as an old bachelor who might be interested in her simply for San's sake, I cannot stand the competition of the present generation of young college boys who are so attentive to her.

We had a Boston class dinner, December 8, so next month's notes will have the story of this. Happy New Year to everyone. — AZEL W. MACK, *Secretary*, 72 Charles Street, Malden, Mass.

## 1916

This space in The Review is our information exchange from now until our next reunion. Your Secretaries hope that more of you will take advantage of this opportunity by telling us of your whereabouts and your present interests. We have

a few more notes from some classmates who did not attend the last reunion: Herbert Gfroerer, II, in response to a letter from your Secretary, writes as follows: "The nearest I've come to seeing a '16 man is a conversation by telephone with Chuck Loomis, while he was on his way to the reunion. — Sure enjoyed reading the doings of the boys last June and regret that I couldn't be there. Nothing much new with me; still with the automobile industry, at present as regional manager, Dodge Brothers Corporation, Greensboro, N. C. Our office covers Virginia, North Carolina, and South Carolina, three of the most progressive of the southern states, and an ideal place to live, by the way. — Tell Hen Shepard my golf is as bad as usual."

We have the following from H. B. Smith, XIV: "It was quite a little disappointment to me that I was unable to attend the 20-year reunion of the Class in Cambridge last June. There are quite a number of the fellows whom I have not seen since I left the Institute, and it would be great to see them again. The 25-year reunion a few years hence will certainly be something to look forward to and I certainly shall not miss that; possibly there will be some occasion to meet the Class in the meantime. For the past 14 years I have been with the electrical department of Underwriters' Laboratories and my present work is a combination of editor and engineer, in charge of the preparation and publication of the Laboratories' standards covering electrical devices and materials. A little less than a year ago the Laboratories moved to its present location in the Butterick Building on Sixth Avenue, New York City. Here we have some very comfortable quarters, including an interesting electrical laboratory, which I shall be very happy to show you if you will call some time when you are in New York City. — For some time I have been residing in suburban New Jersey — 211 Ampere Parkway, Bloomfield. — Ampere Parkway is a good street name for an electrical man, isn't it? It was good to hear from you, and when I have occasion to be in Hartford again, I shall make it a point to say 'hello' to you."

Classmates in or near Coral Gables, Fla., please take particular notice: The following has just been received from Walter H. Junkins: "I am glad to comply with your request for news from me, but I am not sure I can tell you anything interesting. I am living, this winter, in Coral Gables with my family, which consists of my wife and two children — a girl, 12 years old, and a boy, 14. I am not employed, but have been looking around down here for an opportunity to go into business. My last employment was with the Metropolitan District Water Supply Commission of the state of Massachusetts as chemist and bacteriologist at Enfield, Mass., in 1935. That gives you briefly my present status. We like it down here in the winter, so that is one reason for being here. New Hampshire is my home state, and we call Rye Beach home in the summer. If I have any classmates in

this section of Florida, I would be glad to contact them. I have a business address at 715 Professional Building, Miami."

Those attending the reunion will remember that Frank Ross was unable to be with us because he was contending for the National Open Golf Championship at the time of our get-together. The Hartford newspapers carried the following interesting article about Frank: "Frank Ross equaled the amateur course record at Wampanoag yesterday, probably the latest in the season that a score as low as 68 has been registered. Ross was out in 36 and back in 32. He birdied the 10th, 12th, 13th, and 14th. Not only that, but he hit the cup on the 11th, rimmed the cup on the 16th, and hit the cup again on the 17th. He missed a 20 footer for a birdie by inches on the 18th. Winter rules prevailed. Ross's card: out — 535, 553, 433, 36; in — 443, 324, 444, 32; total — 68." — Bob Wilson, take notice: We are going to match you with Frank Ross at our next reunion. — JAMES A. BURBANK, Secretary, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, Associate Secretary, Coleman Brothers Corporation, 245 State Street, Boston, Mass.

## 1917

Apparently the best laid plans of mice and Class Secretaries must occasionally be revised. This installment of the reunion serial must be set aside so that we may place emphasis on the magazine *Fortune* for the month of November. No member of the Class should miss it. Specifically, attention is called to the article on Technology cleverly written and well illustrated and, in particular, to the comment on the worthy Dean, H. E. Lobdell. It is worth the price of the package. Elsewhere in the same number is an excellent photograph of Stafford Ellithorp as one of the executives of Beech-Nut at Canajoharie, N. Y.

A. P. Dunham has returned to the Boston area and joined the organization of Fritz Shepard '12, the Lewis-Shepard Company, manufacturers of lift trucks, and so on. — The Roving Reporter notes that Stan Krug, "the biggest iceman in southern Ohio," was one of the youngest of 38 Alumni who turned out for a dinner of the local Tech Club at Cincinnati in November. He will come to Marblehead if the ice season does not come on with too much of a rush. — Newspaper releases announce that Robert C. Erb has been named general manager of the J. F. McElwain Shoe Company, succeeding Francis P. Murphy, Vice-president, who has been elected governor of New Hampshire. The announcement says that in view of the demands on the time of the Governor-elect, Treasurer Erb will immediately assume the position of general manager. The J. F. McElwain Company make the Thom McAn shoe and in many ways are leaders in the shoe industry. Not only are they one of the largest factors, but their methods have been revolutionary and so successful as to place them in a class quite by themselves.

One of our agents has recently been basking in the November sunshine and blooming roses of southern Texas. He reports seeing Major L. E. Schoonmaker, who is assisting in the precautions at Galveston's Fort Crockett to stave off invasion of the Gulf Coast from Central or South America; Robert N. Gay, not only a rising but a really risen mortgage banker and insurance expert of Houston; and the officially appointed plenipotentiary of Texas to all 1917 reunions, E. G. Senter from Dallas, who is proud of his appointment — as he has reason to be. — Schoonie's shifts from Hawaii to Alabama to Texas, and so on, have previously been noted from time to time in these columns. His present station offers year-round sea bathing, the protection of a proven sea wall against tidal waves, and an abundance of choice comestibles extracted from the warm ocean waters of the Gulf. Besides, there is opportunity to engage in the sport of catching game fish.

Bob Gay, however, rather than Schoonie, is the exponent of inducing kingfish, tarpon, sailfish, and what-have-you to grasp hooks and keep ahold of them until landed. Bob is actually modest about it all, though he has many photos to submit as mute evidence of prowess, and he keeps them in his office along with an ancient slide rule which gets much exercise and serves to impress both visiting contractors and his partner, Colonel Wood. Through inquiry elsewhere in the city, it transpired that Bob has a military title of field rank, being a major on the divisional staff of the Texas National Guard, and also that his standing as a fisherman is more widely recognized than he imagines. On reputable authority it was learned that Major Gay in Gulf Coast piscatorial circles is spoken of respectfully and affectionately as Backlash Bob.

A special reporter sends the following note from Baltimore: "A group of us held a 1917 luncheon at Baltimore on Thursday, November 12, during the meeting of the American Institute of Chemical Engineers. We had seven classmates around the table at the Lord Baltimore Hotel, notably: Dunc MacRae, Dave Pierce, Barney Dodge, Carl Dean, Frank Howard, Walt Whitman, and Ken Bell. We allowed Marceau '12 and Hitchcock '20 to sit with us. Every one of the seven plans to attend our 20th reunion and is looking forward to it greatly." — RAYMOND STEVENS, Secretary, 30 Charles River Road, Cambridge, Mass.

## 1918

Groping through the club-car stuffiness for some means of contracting the miles between Chicago and Boston, Harold Weber was almost on the point of looking out of the window. He had been on one of his periodic trips to the laboratories of the Universal Oil Products Company where, for a consideration, he dispenses professional wisdom. He was, we said, almost on the point of gazing vacuously out the window when with pulse tingling and eyes alight he perceived a youth beside him deep in that much overrated



1918 Continued

achievement known as reading. The periodical was *Pencil Points*; the article was evidently a thin romance fabricated around a long-haired, proud figure, for the title was "Kautzky and His Drawings: The Story of a Virtuoso's Rise"; the author, none other than our own Kenneth Reid. If he sees this, let it also be known that the brethren would appreciate news of him which arrived by less dismaying and roundabout channels.

Julian M. Avery, so the little birds say, instead of entering upon some of the chance skulduggery which has lured many of us from our academic fields, is still faithful to electrochemistry. Formerly of the Union Carbide and Carbon Corporation, he has just joined the staff of Arthur D. Little, Inc., research chemists and engineers just down the river from old 10-250 where we listened to Professor Talbot and Dr. Lewis.

During November your Secretary traveled aplenty: to New York, to western Massachusetts, to Yale, and to Cornell, but in all those miles he didn't meet a single individual bearing the M.I.T. 1918 trade-mark. — F. ALEXANDER MAGOUN, *Secretary*, Room 4-136, M.I.T., Cambridge, Mass. GRETCHEN A. PALMER, *Assistant Secretary*, The Thomas School, The Wilson Road, Rowayton, Conn.

## 1919

Since the class notes must be in about one month before The Review goes into the mails, I am unable to tell you in this issue about our December 4 get-together at Walker Memorial. — The questionnaire went out three or four days before the writing of these notes and the response of the Class has been most gratifying. In three mails we have heard from approximately 37 members, of which number 27 have sent in class dues and nine expressed their intention of coming to our dinner. Practically all of the others are not near Boston, and two or three had business engagements. There is every indication that we will get complete information from a very high percentage of the Class. This definite showing of class spirit confirmed the writer's feeling that all we needed was a live nucleus of class officers to handle a small amount of work and regular notes in The Review. By the way, many of the Class do not subscribe to The Review, probably because of the long absence of class notes. Kindly pass the word around that we intend to appear in print regularly, so that classmates can take advantage of this most satisfactory method of receiving news.

I forgot to tell you that 26 of the questionnaires returned indicated the writers' intentions of attending our 20th reunion. Some one suggested that it be held around Cambridge during alumni week-end, so that we can meet members of near-by classes. This seems like a good thought. New Haven was suggested in order to make the location equally accessible to those in Boston and New York. I shall be glad to hear from members of the Class in this connection. — Needless to say, the

fine coöperation of the Class in returning the questionnaire has given your Secretary ample material for some time to come. If there are any members of the Class near you, give them a ring to see if they received the questionnaire and returned it.

Received a fine letter from Clarence Nutting, who was at the Pops banquet last June. He is research engineer at the Arlington Mills, Lawrence, Mass.; has a boy, 17 years old. Clarence said he had seen Chet Stewart and Hyman Selya recently and that all three would be willing to help on the class work. Chet is operating a consulting practice in Boston, specializing in automatic controlling apparatus for pressure, temperature, and so on. This, incidentally, makes him a competitor of your Secretary, who is in a similar field with the Brown Instrument Division of the Minneapolis-Honeywell Regulator Company, Boston. So if you fellows didn't see me talking to Chet at the Class dinner, you now know the reason! Hyman is part owner of the Sagamore Color and Chemical Company, Boston; is married; and has two children: one boy, six years old, and one girl, four years old.

I received a questionnaire also from my namesake, Alan G. Richards, who is assistant to the president of the Dewey and Almy Chemical Company, Cambridge, Mass. Alan has a daughter, Vivian, 16 years old, and answered "yes" to everything on the questionnaire. — The next issue of The Review will cover the class dinner, with its election of officers, executive committee, reunion committee, and so on. It will contain also further information received from members of the Class. — ARKLEY S. RICHARDS, *Secretary*, 26 Parker Street, Newton Centre, Mass.

## 1921

1937! Well, what if those last two numerals are increasing at an apparently accelerated pace, here's another milestone to peg the good things of the past; an intermediate reference point from which to take a foresight on the vista of good things to come; a refreshing new start whereon we resolve to deliver notes to The Review Editors on time as an example to our readers to resolve to deliver notes!

George F. Gokey, 28 Gokey Building, Jamestown, N. Y., is hereby exempted from the immediate necessity of any such punitive resolve. His name shall be boldly carved in the Hall of Good Deeds to Class Secretaries for the number 1 unsolicited letter of the current season, which says in part: "I read with interest the account of the reunion which reminds me that I have been a long time making good the promise I made at Norwich in June. In this neck of the woods '21 men are sorta scarce — almost as scarce as Republicans! (What, no news of the family of Anderson for the Dean's office, George? — Asec.) Some of these days I hope to mush over to Buffalo and call on Paul Hanson and Squeeze Huggins, so you can always live in hopes of getting a real news scoop. For myself, you will recall that I finally

succumbed to the ranks of the benedicts on April 18. I guess that makes me one of the longest 'holdouts' in the Class — next to Stuie Nixon. The girl: Mrs. Edna Bigelow Sewell, formerly of Miami, Fla. On August 1 we took up our residence in Jamestown when I returned from New York to take over the management of my father's property. We are now comfortably located at 129 Beechview Avenue and ready for all comers." Many thanks, George, and heartiest good wishes from all of us; let us know when you emerge Gothamward from the interior and maybe we can round up Munnies Hawes, Count Littlefield, and Harm Deal from the Bubgee phalanx up ahead!

We wish to acknowledge receipt of a very cordial note from Ralph T. Jope '28, Secretary of the Advisory Council on Athletics, thanking the Class for our contribution of \$25 to the alumni athletic fund for the coming year.

Seen at the November smoker of the M.I.T. Club of Northern New Jersey: P. T. Coffin, W. A. Emery, W. R. Ferguson, F. E. Kowarsky, H. L. Levin, J. C. Mahoney, Louis Mandel, R. S. Wetsten — who furnished the music — and C. A. Clarke.

Recent changes in address include: George H. Atkinson, 70 Admiral Boulevard, Dundalk, Md.; Arnold R. Davis, 8 Ferris Drive, Greenwich Gardens, Old Greenwich, Conn.; Captain John P. Dean, 770-3 Scott Avenue, Fort Leavenworth, Kansas; Robert M. Felsenthal, Box 264, Angola, N. Y.; Lieutenant Lawrence B. Richardson, United States Navy, Naval Aircraft Factory, Philadelphia, Pa.

Now that the days have begun to lengthen, you'll have more time to put that Christmas writing material to work, to aid the deserving cause of keeping your Secretaries out of the class of forgotten men! — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Paper Manufacturing Company, Manchester, Conn. CAROLE A. CLARKE, *Assistant Secretary*, 10 University Avenue, Chatham, N. J.

## 1922

There are not many items in the file for this month. Eddie Ash came through Rochester a few weeks ago and I had a visit with him on the telephone although he could not stay long enough to make a real call. — We have the following letter from George O. Clifford who is now living at 615 Oxford Road, Bala-Cynwyd, Pa. "I suppose that a move is the proper cue for a letter to the Class Secretary, so in the interest of helping the Class of 1922 to make The Review oftener I will pass on a little information about myself. Since 1924 I have lived in Evansville, Ind., my home town, where I was connected with The Evansville Tool Works, first in the production end, and later as president and general manager. We had plenty of tough sledding during the depression and while we managed to pull through without folding up, we found ourselves with a plant with a poor earning record, no working capital, and with a group of stockholders who couldn't help us. Con-

## 1922 Continued

sequently when an offer came to become associated with one of our largest and soundest competitors, and, about the same time, another opportunity to dispose of the Evansville plant, there was only one thing to do. Accordingly I sold my interest there and am now living in Philadelphia, connected with Fayette R. Plumb, Inc., as assistant to the president. It is, of course, something of a wrench to leave a place where one has lived a long time. I was mixed up in a good many things: Rotary, the Y.M.C.A., Community Fund, director of a small bank, treasurer of the school board, trustee of the college, and so on, so it is quite a change to move to a new place and have to start all over again. I will admit it is a relief not to have a community fund or charitable drive to have to put over this year. Mrs. Clifford's family are closer to us here, and we really like it very much. Her brother, Terry Mitchell '21, visited us not long ago. We have two children: a boy, 12 years, and a girl, nine.

"It has been nice to meet a few Tech men here, which was one thing I missed in Evansville, as they are few and far between out there. I am looking forward to meeting more of them. Dexter Shaw, X, C. W. Stose, X, Anderson, F. H. Wyeth, VI-A, and B. A. Dickson, II, are some of the gang that I have contacted so far. I hope that any others who are in this vicinity will get in touch with me. If you see Hugh Shirey, give him my best."

We would like to have more letters from classmates, either concerning their own activities or the news they may happen to have regarding classmates with whom they have come in contact. We extend to you all our very best wishes for 1937. — C. KING CROFTON, *Secretary*, United Eastern Coal and Sales Corporation, Lincoln-Alliance Bank Building, Rochester, N. Y.

## 1923

But for the movements of various members of the instructing staff of the Institute, there wouldn't be an awful lot to fill our space this issue. Dick Frazier is back in the Electrical Engineering Department after a year as exchange professor at the University of Kansas. — Jack Zimmerman, after 13 years at Technology, resigned on July 1 last to take charge of the Newark development laboratory of the Linde Air Products Company. He reports that the move came about through his growing contacts with welding and cutting in connection with the M.I.T. welding laboratory during the past five years. He is supervising a laboratory which develops apparatus and processes for promoting industrial uses of oxygen and acetylene.

William Wolfe reports to Professor Locke '96, who relays the information, that 24 hours a day is hardly enough to take care of the two jobs which he is handling. He is in the engineers department for the city of New York and also has his patent law office at 299 Broadway. He moved out on Long Island to give his family a little more room and the kids a place where they can grow up

properly. New York, he says, is too congested for the latter and they take an interest in things so that father has to discuss baseball, football, the sailing of yachts, and the flying of kites. — HORATIO L. BOND, *Secretary*, 195 Elm Street, Braintree, Mass. JAMES A. PENNYPACKER, *Assistant Secretary*, 96 Monroe Road, Quincy, Mass.

## 1924

The Secretary received an interesting letter a few weeks ago from Earl Frazier, who wrote as follows: "Another marriage you may record is that of the writer and Miss Frances Sprague Lang, a graduate of California Teachers' College, which took place on June 23 at the Trinity Lutheran Church in Donora, Pa. After a six and a half weeks' trip through ten countries in Europe, going and returning on the *Queen Mary*, we are at home at the above address (417 East Beau Street, Washington, Pa.)."

"The writer, on October 23, gave a paper before the fall meeting of the glass division of the American Ceramic Society at Cambridge Springs, Pa. The subject was 'Engineering Aspects of European Glass Plants.' I also attended the international congress on glass in London in July while in Europe."

A recent card announced that G. Raymond Lehrer and Leslie I. Madden have incorporated as Lehrer and Madden, 40 Broad Street, Boston, for the purpose of dealing in all lines of insurance. Our best wishes go to the new organization. — From that source of much information, Professor C. E. Locke '96, we learn that Atherton B. Weston, who has been with the American Smelting and Refining Company at Octave, Ariz., now has a new job at Bishop Creek, Calif. We hope Weston will recognize the scantiness of this information and let us know more about his recent doings.

From address changes we find that Charles R. McCutcheon is with the Securities and Exchange Commission in Washington; that Lloyd Gensel is addressed at the Treasury Department, Saginaw, Mich.; and that Tom Nevin is with the Rockwell Products Company in Hartford, Conn. An invitation is extended to these classmates and others who have moved, married, started working, quit working, or become either famous or infamous, to tell us more about themselves. — FRANCIS A. BARRETT, *General Secretary*, 50 Oliver Street, Boston, Mass.

## 1926

The knee-action portable which click-clacks out these notes in a furious demonstration of slow motion seems to be basking, like the Secretary, in the lethargy of Thanksgiving's gastronomical afterglow. Not even the near-empty folder of class news beside it can arouse it to that synthetic fluency which it so often displays of its own accord and without aid from its operator when the Secretary is bereft of anything to write. Only the impending Yuletide and New Year energize it; its shift key swings in the capital letters with enthusiasm and heartiness to write

MERRY and HAPPY in behalf of every member of this Class. The prospect that it can continue in the coming months to record more marriages, more births, and new vocational achievements in the History of 1926 warms even its cold platen with pleasurable anticipation. It collaborates wholeheartedly with the Secretary in these good wishes and in this faith that the Class will continue to distinguish itself in more serious activities even as it did last June in the violently uninhibited art of reunion.

A glance at the tattered folder alongside, our warehouse of the newsworthy, reveals that it does contain a few choice items. There are clippings, for example, reporting two marriages: that of Gustave Richard Peterson on November 7 to Elizabeth Cummins Graves of Louisville, Ky.; and that of George Vernon Steele in December to Elinor Fairfield of Boston and Prouts Neck, Maine. The Petersons are living at 19 Hamilton Road, Brookline.

There are a couple of letters, too, both from our two European representatives, Dave Shepard and Fred Walch. Dave reports that his wife and two children are returning to the States for a visit and that he hopes to join them here for several weeks. He was sorely missed at the reunion and we hope he can make the trip this time. Fred is foreign representative for the Dewey and Almy Chemical Company of Cambridge. He and Dave stage occasional class meetings in Paris — a procedure that we hope foreshadows a complete class reunion in that city some day.

And finally, emptying the dog-eared folder, are these memoranda: Allen L. Cobb is with Eastman Kodak's department of safety and fire prevention in Rochester; Isaac W. Gleason is an electrical engineer for the New Jersey Power and Light Company, Hackettstown; Henry C. Rickard may be found at the office of the United Shoe Machinery Company of Argentina, Cangallo 3175, Buenos Aires; Acme, Texas, is the home of Elmer Johnson, where he works for the Certain-teed Products Corporation; Ariel Horle has left Mexico, returned to Brookline, and shortly moved again, this time only to Peru; Francis S. Dunbar is with the Cape Cod Shipbuilding Corporation, Wareham; and John Driscoll has left Framingham to reside at 439 Biddle Avenue, Wilkinsburg, Pa. — J. RHYNE KILLIAN, Jr., *General Secretary*, Room 11-203, M.I.T., Cambridge, Mass.

## 1927

Our 10th reunion is not so very far off, and plans for the celebration are already under way. A group of our classmates in Boston met recently to formulate preliminary plans. Bill Taggart is the general chairman and Ray Leonard has been delegated to scout around for possible sites. If anyone has ideas regarding locations, Ray would appreciate hearing about them. His address is 510 Statler Building, Boston, Mass.

The only feature so far that appears to be definite is the date. This should be on a week-end, starting Friday night, and



1927 Continued

that week-end has been pretty well determined for us by the Institute. Commencement Day will be on Tuesday, June 8, preceded by the Alumni Day on the 7th. So, in order to permit men coming from a distance to attend both if they desire, our 1927 reunion should be on June 4, 5, and 6. Present plans call for the appointment of general reunion committee members in various cities throughout the country. These appointments will be announced shortly, but in the meantime, it would be appreciated greatly if any 1927 man who has anything to suggest would communicate with Bill Taggart at the Dewey and Almy Chemical Company, Cambridge, Mass.

In these days of world's records it is not unusual, perhaps, to find that a member of '27 has had something to do with the framing of a new one. We refer to Fernando Canada, who, according to the October 23 Boston *American*, is presently located in Madrid, Spain. It appears that the government radio station has the same wavelength as the largest insurgent station located at Seville. In order to blanket the insurgent station, the Madrid transmitter has operated continuously since July 18 with only four short interruptions due to breakdown. Canada was pressed into service by the government to do a good blanketing job. It is reported that in the battle of the air, old, cracked phonograph records were Canada's shock troops.

Edgar Marburg, who has been with the American Sheet and Tin Plate Company at Vandergrift, Pa., for some years, has recently been promoted to be assistant chief metallurgist. — We are happy to congratulate Walter Blake on his marriage to Miss Marjorie Diehl, daughter of Mr. and Mrs. William Diehl of South Natick, Mass., on October 24. Mrs. Blake attended Bradford Academy and was graduated from Miss McClintock's School. — The New York *World Telegram* reports the recent marriage of Cortelyou Simonson and Miss Margaret Breard McAdoo, daughter of Mrs. George M. Hawks of Bennington, Vt. They will live at 1100 Todt Hill Road, Dongan Hills, Staten Island, N. Y. — Maurice Davier has recently been transferred from the Johns-Manville plant at Manville, N. J., to the New York office of the company. The change is another promotion for Maurice. He plans to remain in Plainfield, N. J., where he has lived the past several years. — Ed Wells is another who makes his career and headquarters the Johns-Manville Company in New York. Ed does considerable traveling in his capacity of chief engineer of the transportation department.

Pub Whittier had reason to and did rejoice mightily in the late summer on the arrival of his son and heir, Charlton Bernard. Pub is assistant manager of the Owens-Illinois research department and is located in Toledo. — An event of similar joy and importance is recorded for the Howard Fergusons: On October 25, little Miss Ann made her appearance at 3536 Tolland Road, Shaker Heights, Cleveland. Howard would like to hear from

any '27 men who are passing through Cleveland. He may be reached at the Standard Oil Company (Ohio) main office — Hank Steinbrenner is reported as still being in Cleveland and Frank Rhinehart as being an occasional visitor from Toledo where he is associated with Walker and Weeks, architects. — **RAYMOND F. HIBBERT**, *General Secretary*, Care of Johns-Manville Corporation, Waukegan, Ill. **DWIGHT C. ARNOLD**, *Assistant Secretary*, Arnold-Copeland Company, Inc., 222 Summer Street, Boston, Mass.

## 1928

This month's series of personalities in the news is headed by Henny Dean of Course XV fame. Henny has been with the Union Oil Company at Los Angeles for most of his business life and when we saw him last summer he was beginning a two-year leave of absence from that company to embark on a special research project in New York and, by the way, Hen, old boy, if this new activity is not too confidential, we'd like to know a bit more about it. The present Dean family was founded on June 25, 1932, and to date has one offspring: a girl, aged one, plus.

You can reach George DeCamp, that is, if you want to, at R.F.D. Number 4, Attleboro, Mass. His business history to date is first, Hudson Motor Car Company, then Gorham Manufacturing Company, and now secretary of the New England Lacquer Company. In addition to Mr. and Mrs. George, the DeCamp family includes a boy, aged two, and a girl, aged six. Anyone who is public spirited enough to devote at least a third of his personal time to the community should certainly deserve some kind of a medal, and George DeCamp is doing just that, for he is scoutmaster of the local Boy Scout troop; so give him a hand, ye lads of '28!

Next comes a bachelor, Warren Fleming by name, and he merits special distinction because the bachelors are getting fewer — in fact, we may not be able to have our bachelor versus married men's ball game at the 10th reunion if the trends keep up. Warren switched from Congoleum Nairn to Corning Glass Works after the depression had taken its toll at the former company. Warren's special work is heat engineering in the melting department of Corning Glass. He comments that low-expansion glassware, telescope mirrors, and so on, require much higher melting and working temperatures, which facts have given him a great many interesting problems.

Grant Flynn wrote the following terse but interesting letter from Hamilton Drive, Chappaqua, N. Y.: "Nothing much to report regarding myself. Last job ended June 24 in plane crash at Medellín, Colombia. Ernesto Samper, organizer, technical director, and chief pilot of the Saco Air Line, was killed in that crash with 15 others. Since then I have been mending and stalking the elusive job." Well, Grant, if that's "nothing much to report," then some of the rest of us must be blowhards. How about a more complete story on your adventures to liven the columns of this section? After all, we

white-collar guys are poor copy as compared to an aviator who gets cracked up down in the wilds of Colombia, South America. Among the vital statistics Grant lists his marriage as May 5, 1930, and his children as one boy, aged five.

The envelope of my next letter bore the seal of the "Herzog Furniture Company of Saginaw, Mich." Inside I learned that our own John L. Herzog is now the president of this company and has a family, including a boy, aged two-and-a-half years. That's a brief report, but it's all we have — if you want more news, write to John at 1012 Vine Street, Saginaw, Mich. — My next communication was likewise brief and to the point. It arrived from Bob Horn at 50 Market Street, Poughkeepsie, N. Y. Bob was married way back on March 27, 1921, and has two boys: one, aged 12, and the other, aged nine. It looks as though the Horn family is our oldest. Bob is working for the Central Hudson Gas and Electric Corporation.

Bob Hunn has a new home down at 2229-A Dearing Court, Louisville, Ky., and he's working as designer for the Strassel Company, interior decorators. This concern was established in 1845 and does business in about a dozen states all over the South. Bob was married in February of last year to Miss Dorothy Doelckner of Louisville, who is also an artist. — News about Ben Kelsey was relayed by Ralph Jope, and we learned that Ben is first lieutenant of the Army Air Corps and is a pursuit project officer, primarily concerned with procurement of equipment at Wright Field. Ben's fine record as a pilot includes over 3,000 hours in the air. He admitted that he was married last August to Miss Caryl Rathge. So here's another confirmed bachelor who has left the ranks.

Morey Klegerman is associated with Alexander Potter, consulting sanitary and hydraulic engineers of New York, and has been in the position since 1928. He is engaged in sanitary engineering work and has contributed numerous articles on sanitary engineering problems to well-known scientific journals. Ray Jack says he's permanently located at the Wood River, Ill., refinery of the Standard Oil Company of Indiana. Thanks, Ray, for the news of other classmates; it just happened we had heard from those you mentioned. You were much too brief about yourself, however. How about a further and more complete note? — John Linebaugh is to be found in London, England, where he's chief engineer for Frigidaire, Ltd., at Edgeware Road, The Hyde, Hendon, London. John was married in July, 1928, and has one boy, aged seven years, and a girl, aged one. — Our last bit of information for the month's news comes from Lou O'Malley, XIV, of boxing fame. Lou was married in Cincinnati, Ohio, on October 17 to Cornelia Ann Leary. Lou and his bride are now residing on Jerusalem Road, Cohasset, Mass. — **GEORGE I. CHATFIELD**, *General Secretary*, 5 Alben Street, Winchester, Mass.

1929

We open these notes with best wishes for a happy, healthy, and prosperous New Year. We hope, too, that you had the joy of both giving and receiving in full measure on this Christmas just passed. As these notes are being written, your Secretary is making plans to travel back East for a Thanksgiving dinner at home. That trip will consume the second week of my annual vacation, so there will be no such journey at Christmas time. If all goes well, I'll spend some of my time in Boston and will be thinking of you all when I order a dinner of fresh sea food and breathe that cold, salt sea air.

During the past two months your Secretary has had the opportunity of attending two meetings of the Detroit Technology Association. The first meeting was also attended by Ed Yates, IX-B, and Mac McDaniel, XV, both of whom are members of the Association. Ed is in the sales department of the Budd Manufacturing Company in Detroit and Mac is on special work in the office of the manager of the parts division, Chrysler Corporation, specializing in merchandising. I ran into Ed again at the second meeting I attended and also found Wen Holt, IV-A, and Gratz Brown, II, in attendance. Wen is in the art and color department in the General Motors Corporation and Gratz is still with the A.C. Spark Plug Company, doing engineering work on air silencers and cleaners. Wen has been with General Motors only during the last year or so and has been engaged in various kinds of employment in the architectural field since graduation. Gratz, as you will remember, has been with A.C. since graduation. Neither of the two is married; in fact, none of the four has made the step. Gratz says he has no prospects either. While he had no bets with Brig Allen on the subject, he got a kick out of Brig's marrying before he did.

Through the newspapers we learned of the marriage of George J. Meyers, Jr., VI-A, to Miss Barbara Eleanor Houghton of Cambridge, Mass., on September 19, 1936. Their engagement was announced last April. They are living in Marblehead, Mass. George is still working for the General Electric Company in Lynn, where, if our memory is correct, he has been since graduation. — Also from the same source we learned of the marriage of Norman Wickstrand, II, to Miss Alice M. Widell of Waterbury, Conn. They will reside in Bristol, Conn., where Wicky is engaged in engineering work with the New Departure Manufacturing Company. — From the Boston papers we learned of the marriage of Putnam King, IV, to Miss Una Cleveland Rogers of Concord, N. H., on October 3, 1936. They have been living in Concord, Mass., since November 15.

The engagement of Alexander L. H. Darragh, II, to Miss Ruth Harvey Orndoff of Chicago was announced in Chicago papers on September 14. The wedding took place in December. — Boston papers announced the wedding of Ernest T. Peverly, Jr., XV, and Miss Leondine

Rescigno of Philmont, N. Y., on September 10. They are living in New York City where Ernie is assistant to the chief engineer of Dow Jones and Company, Inc.

To all of these married and engaged classmates we extend our best wishes for a lifetime of health and happiness. Though no official tally has been made, it seems to your Secretary that the bachelors in our ranks must be outnumbered by the benedicts by an appreciable margin at the time of this writing. What that proves, however, is a matter to be settled in your own minds.

It is with sorrow that we record the passing of Boris V. Nagashev, VI-A, on September 26. He was killed in an automobile accident in West Townshend, Vt., when he lost control of his car. He was 32 years old and had brilliant prospects as an inventor in electrical and radio fields, in which he was already widely recognized. There are no survivors.

George P. Walker, Jr., III, is now back in the United States. In telling of his personal affairs, he refers to his marriage in 1932 to a California girl, Helen Griffith by name, with three children as a result. Two are living and keeping monotony away from the door, if any such thing as monotony at the door were possible in Mexico at the present time. George spent five years in the employ of the American Smelting and Refining Company and then changed to the El Potosi Mining Company in Chihuahua, where at various times he has held almost every job from efficiency engineer to division foreman. Recently he resigned from that company and his inclination is toward securing a job in the United States. He tells the same story as other M.I.T. Alumni who are engaged in mining in Mexico: of increasing difficulties, due to the onerous demands of labor, higher taxes, financial restrictions on the export of profits, passport limitations, and in fact almost everything to hinder efficient and profitable operation of foreign capital in Mexico. We hope George makes satisfactory connections in the United States, for, in spite of everything, it is still a pretty fine place in which to live and work.

The following is an excerpt from a letter Dan Danziger, X, wrote to the Alumni Office recently. Incidentally, Dan is now using the same address as was listed for his home address in 1929, namely 3 Ayer Place, Rutherford, N. J., so he must be living at home: "If, as we are told, the road to hell is paved with good intentions, I must have been one of the contractors. But, finally, I have bent my efforts toward helping fill some columns for 1929, and here is the item you have been waiting for: the personal history of W. J. Danziger.

"After 1929, Course X-A and an S.M. in 1930; then job hunting and taking civil service exams with high marks but no appointments; late in the year a few futile months of chasing the rainbow in trying to sell stokers for a now defunct company. After a few months at liberty I became a salesman for a manufacturer of men's high-priced sportswear. Next I had a two months' run on Broadway as a

salesman in one of a chain of hat stores. Everything was lovely, including the salary, until the chain became defunct. It was about that time that I satisfied a long-felt want by playing football for an unimportant semiprofessional team on Sundays. Came 1932 and a minor surgical operation, for recuperation from which I used the summer months doing nothing, especially since I had achieved eligibility for a technical position in the state civil service by examination some time previously, and a local politico who had influence had faithfully promised I would get the appointment, September 1. Experience proffers this maxim: Don't trust politicians.

"In the late fall of 1933 I became an extra salesclerk in Bloomingdale's New York department store. It was routine, if any Christmas rush can be called routine, except for a couple of days in the liquor department right after repeal, when the store had one of the six or so liquor stores open in the whole city and the customers begged the salesclerks to take their money and give them a bottle, and except, also, for a Saturday afternoon spent as flatfoot (detective) in the toy department. The winter months of 1934 I spent plowing through snow to get to my job as teacher in a camp right under George Washington Bridge. In June, 1934, I obtained a job as chemist with the Metasap Chemical Company, subsidiary of National Oil Products Company of Harrison, N. J. I did control and research work, the products being the insoluble metallic soaps, principally the stearates of aluminum, zinc, and calcium. In December, 1935, I was transferred to the Vitex department of Nopco to prime me for taking charge of a plant on foreign shores, but after getting vaccination, inoculation, and passport, the project was dropped. So I'm still in Harrison, doing research and production work. We make vitamin concentrates (A, D, and B) for various uses, treated cod-liver oils for animal and poultry husbandry, and so on. I don't make much money, but I have a lot of fun.

"Carl Connable, II, is writing advertisements for Brown and Sharpe in Providence, R. I. He was to have been married, the end of August, but I haven't yet heard whether the tentative plans went through. Despite all that training on *The Tech* I must confess ignorance of the lady's name. Also in Providence are Mr. and Mrs. Fred Mason, XV, and baby son. Fred is assistant plant engineer with the Mount Hope Finishing Company, North Dighton, Mass. — When last seen Dick Does, X, was researching for American Sealcone in Brooklyn, N. Y. — Murray Brimberg, VI, is an engineer with WNYC, New York City's radio station. We get together now and then.

"John G. Sullivan, II, was still with New Jersey Bell about a year ago when we had a swell bull session. He expected to get married about the beginning of the year. We live all of two miles apart. — Charlie Roggi, VI-A, when met on lower Broadway a few years ago, was doing pretty well as a bond salesman. — When



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last heard of, Ken Gold, V, was working in Rochester, N. Y. — Earl Krall, X, is a Boy Scout executive in New Haven, Conn.; likes it too. — Ed Worden, XV, is in charge of packaging for Abraham and Straus, Inc., Brooklyn department store; married; and will, I hear, soon have a book on packaging published.

"Bill Gorfinkle, V, is technical representative of Atlantic Gelatin Company, Inc., of Woburn, Mass.; travels extensively, but has his home and headquarters in Philadelphia. — In the crowded lobby of Carnegie Hall, the Saturday night last year when Toscanini was conducting the New York Philharmonic in the Beethoven Third and the Brahms First, I bumped into Miss Polly Betts, V, [now Mrs. Robert C. Elderfield]; as I remember it, we simultaneously blurted, 'imagine meeting you here!' — When last heard from, Hy Davis, X, was designing stuff and things for the Lummus Company in New York. — Johnny Mayoral, X, believe it or not, has been married for more than two years. After working for Driver-Harris, he went home to Ponce, Puerto Rico, to take a position with a local sugar company whose name escapes me at the moment. — Whatever became of that \$10 bet on who would remain a bachelor longer: Charlie Johnson, X, or Honest John Trahey, X?"

Many thanks, Dan, for the fine letter giving us your history and all the news about the rest of our fellows you have come in contact with and heard about in your travels. We all wish that more of those who enjoy reading these columns would do likewise. Well, one and all, do not make any resolutions you know you will not keep, but we hope you will resolve that this year you will give us that letter about your activities since graduation. — EARL W. GLEN, *General Secretary*, Box 178, Fairlawn, Ohio.

## 1931

Jim Fisk has handed the job of Class Secretary over to me and I will try to keep this column interesting and informative. This particular article will necessarily be sketchy as there was little time in which to prepare it. Jim, or rather Dr. James B. Fisk, is a junior prize fellow at Harvard and at the present time is doing some work on high-voltage equipment. Joe Birdsall is also at Harvard, his particular interest being anthropology.

The following are bits of information picked up from newspapers: The engagement of Albert R. Pierce, Jr., and Miss Alice Elizabeth Mills was announced in October. — Arnold C. Childs is engaged to Miss Rita V. Neal of Wellesley Hills, Mass. They plan to be married in June. — The engagement of Robert F. Dolan to Miss Jane Frances Herzig was announced in September.

Miss Priscilla N. Feeley of Pittsfield became the bride of John N. Dyer in June. Johnny was Byrd's radio engineer on the second Antarctic trip and is now in New York working with a broadcasting system. Another June bride was Miss Dorothy Somers, daughter of Lieutenant

Colonel Richard H. Somers and Mrs. Somers of Auburndale, Mass. She became the bride of Johnny Smith. — Charles B. Basinger married Miss Mary F. Ryan of New York in August. Miss Ryan is a sister of Samuel G. Ryan of soccer fame. Sam was best man and Ralph Davis was one of the ushers. Mr. and Mrs. Basinger are living in New York City.

From San Francisco comes news of the engagement of Warren Dickinson to Miss Beatrice Jago of Palo Alto. Dick studied for a while at the University of Berlin. — Coming a little closer to home, we find that the engagement of Daniel Addison Cook to Miss Sally Ryder of Belmont, Mass., was announced last summer. — Dick Blasdale was married on December 11 in Christ Church, Cambridge, to Miss Rhona Perkins, daughter of Mrs. T. D. Perkins of Arlington. Miss Perkins is a graduate of the New England Conservatory of Music and has been supervisor of music in the schools at Putnam, Conn. Dick and his bride are living at 21 Chauncy Street, Cambridge. Included among the ushers were Eliot S. Graham and Leon Thorsen.

Wyman Boynton completed a law course at the University of Michigan last June. He has returned to Portsmouth, N. H., to associate with Jeremy Waldron, one of the long-established lawyers there. Wym was elected to the New Hampshire state legislature a couple of years ago.

Let me have some news, fellows. It seems to me that in the distant past we had some Course Secretaries. If we did, come out from your hibernation; if we didn't, appoint yourself a committee to gather news of your Course, and send it in. — BENJAMIN W. STEVERMAN, *General Secretary*, 11 Glenland Road, Chestnut Hill, Mass.

## 1933

## COURSE VIII

It is a pleasure to take up the pen and mantle of our worthy scribe because it gives me a chance to report that on the evening of November 4 George Henning and Lucy Rauch were married at their family church in Brooklyn, N. Y. It was a bang-up affair, with plenty of flowers and rice, and all of 1933 will be glad to know that the car in which the couple left the church was suitably decorated with a just-married sign and cowbells. George's brother, Bob, came up from Lehigh to be best man, while Lucy was attended by George's sister, Ruth. M.I.T. representatives whom I saw at the ceremony were Art Lutz and Emmy Norris. The latter was an usher. A trip to the Caribbean for a honeymoon sounded pretty ideal, particularly on the day when I received a postcard from Jamaica reporting lots of sunshine and warm weather. The following night it snowed in New Jersey! By the time these notes reach print, the Hennings will be at home at 83-44 Lefferts Boulevard, Kew Gardens, Long Island, N. Y. — Emmy Norris came up to the wedding from Baltimore where he is with the Davison Chemical Company in their sulfuric acid depart-

ment. Emmy likes Baltimore but confesses to just a little nostalgia for New England.

November has been old-home month for me: On a business trip to R.C.A. Radiotron in Harrison, N. J., I ran into Marshall Wilder, Bill Gray, and Herb Neustadt, all in about ten minutes. Herb Wagner, once the genial host at the communications laboratory stock room on the third floor of Building 10 under Mal Gager '30, is out there, too, but I didn't get a chance to see him. The following week the American Institute of Physics had its anniversary meeting in New York. I saw Dr. Slater and Dr. Morse, and learned that Duntley was doing his doctor's exam that week-end back in Cambridge. Best of luck, Quimby. — Steve Avakian, XVIII, turned up at the Business Show. I bumped into him examining the International Business Machines display. Steve is with the Metropolitan Life Insurance Company in the actuarial department.

A letter from Bob MacKay must certainly be passed on. He is the first '33 engineer that I know about who has gone legal: "After fiddling around in an office here in my spare time, I took two years at Boston University Law School, and then, this summer, was most fortunate in cracking down on the Maine bar exams; tied for top mark. Please don't think me too boastful, but I had to do something to redeem myself from the Tech fiasco! When I went to Bangor to be sworn in I ran into Kenneth Bell. He was then working for the Maine Seaboard Paper Company at Bucksport. Whether he's still there or not, I don't know. He was in hopes of a chance with some mid-Western paper company as head chemist and was then waiting for the final word. He had been with the mills at Dalhousie for some time prior to the Bucksport job. He's the same as ever. — I'm not married yet, nor engaged, but as close to it as finances will permit. If you want to get a good attack of nervous indigestion, try opening a law office sometime. Lots of fun! And such a heavy income at the start! Of course, I expected it would be slow at the start, but it doesn't help much to have such expectations realized." We can all settle our legal problems by writing to Robert G. MacKay, Attorney-at-law, Kimball Building, Millinocket, Maine. — WILBER B. HUSTON *Secretary*, Calibron Products, Inc., West Orange, N. J.

## 1934

With Bobby Becker in the mountains of Bolivia, South America, and Hoyt Steele in the wilds of Chicago, the activities of our Class have been necessarily omitted from The Review. At the suggestion of Hoyt and Dick Bell, I have taken over the job of Assistant Secretary, since I am more or less permanently assigned to Boston and living in Cambridge. Taking over such a job requires a great deal of cooperation from you fellows who are in the various cities where Tech men are located. Consequently, we are organizing a system of news gathering

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which I hope will put 1934 up with some of these other classes which are able to show the whereabouts and activities of each member of the Class. In an early issue we will publish a list showing the appointment of one fellow from each Course upon whose shoulders will lie the responsibility of keeping me informed of the activities of fellows within his Course. The Course Secretary will be furnished a list of each fellow in his Course, with whom he is to keep in touch either by cities or by some other grouping according to his own devices.

Since graduation I have been working with the Gulf Oil Corporation in their Boston division and have just completed a two-year training course through which they put certain of their college graduate fledglings in order that they may become familiar with every phase of the oil business. At present I am located in the Park Square Building in Boston. If any 1934 men come to Boston on business, pleasure, or otherwise, I shall consider it high treason if they don't give me a ring or drop in for a luncheon to talk over goings-on.

Before proceeding with any news, I want every 1934 man who reads this column to sit down and drop me a note or at least a penny post card and in it, or on it, as the case may be, I want at least two sentences about (1) where you are, (2) where and for whom you are working, (3) what you do, (4) whether you are married, engaged, divorced, or otherwise, (5) something about some other 1934 man or men. Send these to my home address at 18 Ware Street, Cambridge, or care of the Gulf Oil Corporation, Boston, or to The Review at M.I.T., but at least send them along as soon as possible.

The Class is rapidly going the way of all flesh. As a poor undergraduate, the innocent Tech boy is kicked and cuffed around for four years by integrals, differentials, bending moments, torsional shears, and saturated solutions, so that graduation, when it arrives, seems like an armistice. Instead of basking in the lap of luxury these same fellows go out and get married, no less, and then they have to work. Nevertheless, I take pleasure in announcing that Frank Goodrich Feeley, Jr., II, was married to Miss Ann Groff, formerly of Schenectady, N. Y. Our latest records show Frank with the Munson Steamship Company. If we are behind times, I hope he will drop me a line telling me where he is living "and how." Cupid successfully shot another member of our Class in the person of Dick Marcy, I. One of Wellesley's daughters, Miss Polly Godfrey, was the bride. Now I know why seniors always warn freshmen that Wellesley is only 10 miles or so from Cambridge. Dick and Polly make a charming couple, however, and are living at present in Marblehead, Mass. Dick, we believe, is connected with the United Shoe Machinery Corporation at Beverly. This obligates Dick to drop me a line with some information on other 1934 men north of Boston. Dick's father was, I believe, a fellow

classmate of my dad's in the Class of 1905. Of fellows who were graduate students completing degrees in 1934 we learn that Lieutenant Hiemenz was married to Miss Virginia Cope, daughter of Captain Elijah Cope, United States Navy, at Brooklyn, N. Y. — Miss Mary Frances Hoffman of East Weymouth, Mass., was married in October to Donald MacNaught of Quincy.

From Professor Locke '96 of the Alumni Council we learn that Dr. and Mrs. Anthony Fixaris announce the marriage of their daughter, Eloise Julia, to Robert Murdo McIver. Bob was married at Yuma, Ariz., on October 5. The last we heard of Bob he was located at Oatman, Ariz., with the Oatman Associates, a mining company. — John W. Alder has made a transfer from the mining job he held in Blackhawk, Colo., to one with the Little Ben Mining Company at Landusky, Mont., where he is sampler and surveyor. The company operates a 100-ton cyanide mill, and the mine is producing in a very satisfactory manner. Nearly 100 men are at present employed. The old-timers tell John that he'll need his winter "undies" out there because the temperature goes to 50 or 60 degrees below zero F. — Another miner who needs no introduction is our President, Dick Bell, who is apparently becoming an expert, because he was called upon to deliver an excellent paper on the ball-clay industry before the American Institute of Mining and Metallurgical Engineers meeting at the Penn State College. It was later published in one of the industry's publications.

Among the local fellows with whom I have talked, we find Jink Callan is sales and installation technician for the American Precision Instrument Company. His work carries him throughout eastern United States with the installation of moisture-control apparatus for paper-making machinery. — Harry Eagan is doing mighty well with the Calco Chemical Company as a leather dye specialist covering New England and the East. — Herby McKeague, Carl Wilson, and Frank Baxter were, at the time of our last get-together, working at the American Optical Company in Southbridge, Mass. — Cassius Belden and his wife were lured to the shores of sunny California by the personnel department of the Union Oil Company of California. Union Oil is a fine company on the West Coast and we wish Cash every success. — Paul Lawler is with the Simonds Saw Company at Fitchburg, Mass., but I haven't seen him since graduation to talk to. — Brad Hooper, III, was married on June 20 to Miss Helen Thompson of Nashua, N. H. — Neil Putnam, a brother Delt of the St. Paul Street Delts, has recently been blessed with another heir, bringing the total up to two, I believe. The children, we learn, are no less pretty than their mother, the former Virginia Hyde of Belmont.

In closing our notes for this month of January, 1937, I want every 1934 man who reads this column to make a mental New Year's resolution to write me a

letter before March 1 and the penny post card must be sent in anyway as described above. My acknowledgments to your letters, however, will for the time being have to appear in the news. With kindest regards to you all and the most sincere wishes for a prosperous 1937, I shall close our notes for the first month of what we hope will be a year of great success for us all. — ROBERT C. BECKER, *General Secretary*, Compania Huanchaca de Bolivia, Pulacayo, Bolivia, South America. WILLIAM G. BALL, JR., *Assistant Secretary*, 18 Ware Street, Cambridge, Mass.

## 1935

Hello, gang! We'll start again this time with the newspaper clippings, all of them being about weddings. Elliott Ruckman and Miss Eugenia W. Campbell are to be married this month. Earle Megathlin and Miss Pauline Beauregard probably will have been married by the time you read this. Likewise, Bob Lindsay and Miss Virginia Ruth Turkington will have been married by the time this issue comes out. Alden Edwards and Miss Marcia Beatrice Collins were married on October 12. Stanley Alexander and Miss Lois Mays Nivling were married on October 17. Dick Bailey and Miss Margaret Harrison were married on September 12. Frederick Paul and Miss Ruth Farrell are probably married by this time. Congratulations and good luck to all of them.

Turning to the letters from the fellows, I first have a correction to make: In the November issue I stated that Bill Buechner was working for a leather concern. This was incorrect as he is a teaching fellow in physics at school, working on the high-voltage program of Dr. Van de Graaff. Jack Burton is still studying at Harvard and seems to be pretty busy at it. Last summer he drove out to the Coast and back and saw several of the fellows on the way. He saw Jack Du Ross in Cleveland where he is working for Sherwin-Williams and says that he seems to be having a good time on the side. He also saw Jack Ballard, who is now driving around in an Austin to the great danger of life and limb of his fellow citizens. Croxson is working in Neenah, Wis., for the Kimberley Clark Corporation and is being quite a socialite on the side. Pete Grant is well on his way to becoming one of the prime capitalists of the coming generation. He is now vice-president of the company for which he is working. Peeper Johnston is still working in Rochester for Carrier Engineering Corporation. So much for the news from Jack Burton. Thanks a lot, Jack.

Our next bit of news is from Ralph Woolf, who is still studying at the University of Rochester Medical School. His main difficulty is directly due to the fact that there are only 24 hours in the day. He attempts to fool us into believing that the Medical School is tougher than Tech (as if such a thing were possible!). He says that the professors suggest, somewhat ironically, that in addition to regular studies the students acquire some culture by attending concerts, operas,



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and whatnot. I think we all have a pretty good idea of how Ralph spends his spare time. George Valley dropped in to see Ralph and suggests that in Rochester "the wine is young and the women old . . . if not in years at least in ideas and the town seems to suffer from chronic constipation of ideas in providing things of interest." George is the laboratory instructor in the course of second-year physics in the undergraduate school. He is puttering around with a cyclotron that was installed at the school recently and in between times manages to study advanced physics under Professor DuBridge, one of the leaders in the field of nuclear physics. Ralph visited Ed Friedman and his wife in Westfield, N. Y., one week-end. It seems that the Friedmans expostulated about the virtues of connubial bliss. Ed is doing nicely as biochemist and production manager for the Brockton Wine Cellars, where the proper spirit is instilled into grape juice, resulting in superb Burgundy, port, and fine sherry. Ralph ought to know, for he retreated with a well-stocked car. Ralph also mentioned that George Valley made a trip to New York City where he spent the week-end with Harold Oshry, who is still employed by United States Steel but hankers for the old grind.

Here is what John Brosnahan has to say: ". . . I've heard that Ed Edgar is working for the Pennsylvania Power and Light in Allentown, but have never run into him. Of the 60 boys hired by Bethlehem in 1935, only five were left in the home plant here, three of us being Tech men of one sort or another. Jack Smyser, X, Elliott Reid, X, and I are the culprits. Reid is in the tool steel inspection department, while Smyser and myself are in the laboratories, doing laboratory investigations on plant and customers' troubles, he via the special tests department, while I am in the metallographic laboratory. The steel business is looking up; you may have noticed the announcements of a general raise in the industry. The Bethlehem plant is not the largest in the corporation, but it has the most diversified products, among which are alloy steels for the automobile and manufacturing industries, stainless, tool steels, and special steels, steel and iron castings, drop forgings, large armament forgings, huge shafts and liners for the marine industry, smaller forgings, such as navy shells, air flasks, and so on, and structural shapes. In addition, there are large machine shops, a coke works, and all the rest of the divisions that go to make up a steel plant. But in spite of its size and its 11,000 employees, the plant is a pretty closely knit unit, and Bethlehem is a comparatively small town, so acquaintances are easily made, and social life abundant. We have had some discussion over the possibility of starting a Lehigh Valley Tech club, and hope to work on the idea in the future. There are a few older Tech men in the neighborhood, that we know of, and there are probably more to be found if a little energy were expended in that direction. Would appreciate your

relaying my greetings to all Course III men, via the column: Bob Clarke, Ed Clark, Casale, Stan Lane, Frank Lovering, Mal Porter, John Seaver, Johnny Ryan, and Villa."

Lorin Presby is still working for Phoenix Engineering Corporation and is busy working on a hydroelectric development in Montana. Pres is getting some experience in designing an arch dam. Hugh Fenlon is also working for Phoenix and has been transferred from the rate department to the engineering department. Fred Bechstein visited them a while ago. He had been working for the government up in the Merrimac Valley, but the project slowed up and Fred returned to the city. When Pres saw him he was looking for a job and was planning on spending a day or two with Hugh and Fred. Shortly thereafter they received a telegram stating that he had found a job and wouldn't be able to meet them. — News about Willie Dunn finally reaches the column after having been sent from Willie to Murray Brown to Lorin Presby and finally to me. Willie went back to China after leaving school and landed a position with the Pekow-Tientsin Railway. — Here is Presby's description of his vacation: "I had a vacation the two weeks before Labor Day. I spent the first week making an automobile trip with my folks through the province of Quebec, Canada. This was the first time I had ever been out of the country. I passed the second week at our cottage on Lake Winnepesaukee, N. H. Over Labor Day week-end four of the boys from the Y in Elizabeth came up to meet me, and we headed for the White Mountains. We climbed Mount Washington on the holiday. I had a very enjoyable vacation, but those two weeks passed so quickly. I am afraid four years at the Institute spoiled me as far as vacations are concerned."

Hamilton Dow continues with Bethlehem Shipbuilding Corporation. When last heard from he was aboard the U.S.S. *Phelps* on a trial cruise off Rockland, Maine. At that time Sid Fox, Ed Woll, Al Fletcher, and Ham were '35's representatives at the plant. Since then our representation has been increased by the addition of Clarence Goldthwaite, Alfred McDonald, and Louis Andreoli, all of them in the design department. Originally Al Fletcher was working as a tool chaser in the outside machinist department. He has since been transferred to design. The rest of them except Ed Woll are engaged in the design department either on machinery testing, writing trial trip reports, or doing engineering computations and stress analyses. Ed left the corporation some time in August to go to work in an engineering specialties company in New York City. Sid Fox is still in the design department officially, but he is occupied in a separate field of his own, a chem lab. It has been set up for him and in it he carries out analyses of brazing metals used in the shops, tests on full samples from trial tries, and numerous other odd tests of a chemical nature. Formerly most of this work

was sent out to outside firms. There are numerous other M.I.T. graduates at Bethlehem, in fact enough to form a good sized Tech club. Jim Eng dropped in to see Ham and said he was still working for Halcombe Steel Company in Syracuse, N. Y. He works in the tool steel laboratory.

Here is Otto Zwanzig's report of the month (59 Overlook Avenue, Belleville, N. J.): "John Mooring, Ed Helwith, and I made a forced journey, to paraphrase the venerable Caesar, last week-end — went up Friday night and returned the following night. In the interim I collected a few stray bits of information which might be of interest to VI-A fellows. (I assume Otto means in New York.) I discovered that Dell Terwilliger is working for the Atlantic City Electric and Gas Company, ostensibly in some engineering capacity in the distribution department. Business activity in southern Jersey is evidently quite active, for Dell wrote in a letter to Professor Wildes that his company was busily engaged in line extensions and calculations to change other lines to handle increased loads. By the way, Dell is residing in Salem, N. J., from which place he recently made a trip to Philadelphia where he met Clark Nichols, another VI-A worthy. Clark is working for Leeds and Northrup, also of that city; he wrote in very glowing terms to Professor Wildes, both of the company in general and his own work in particular. He has been at the main plant becoming acquainted with some new control devices which his company has recently been developing and has also been traveling considerably, helping to test the apparatus in the field. Ed Helwith finally finished his master's thesis for his mathematics work at Columbia, and I am happy to report, two days ago began work with Gibbs and Hill, consulting engineers for the Pennsylvania Railroad. It is essentially design and drafting work. Ed was greatly surprised to find Charley Piper, that old nemesis of the professors and of those who greatly appreciated peace and quiet in class after the night before, also working for this firm. This is Charley's third job since leaving Tech; he previously had given Philco Radio Company and the Pioneer Aviation Company the privilege of exploiting his invaluable talents. You can see that with Herb Matchett, John Mooring, Ed Helwith, Paul Herkart, Charley Piper, and myself, VI-A is pretty well represented in the environs of New York City and vicinity.

"I was surprised to hear that you hadn't heard of Stocky's brief return to these shores — brief in that none of us really saw very much of him during the six weeks (July 15 to August 22) that he graced this side of the Atlantic. There really isn't very much to say about it; his exploits at Oxford have been outlined in these pages before, also his varied comments *re* England, Germany, and so on. I haven't heard from him since he went back, so am unable to give you any more recent news. On be-

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half of the VI-A gang which hadn't heard of George Dunlap's marriage before reading the news in the last issue of *The Review*, I wish to send our congratulations and would like to ask George when he is going to tender that blow-out for those of us who have not as yet succumbed."

To continue with the electricals, here is a letter from Beverly Dudley: "Well, to begin with, I am no longer associated with the R.C.A. Manufacturing Company and consequently won't be bothered by reading in *The Review* that I am at Camden when in fact I am in Harrison, for the truth is now that I am at neither place. I must admit that I learned quite a bit about the manufacture of tubes during my year with the Radiotron group, but am not the least bit sorry to be away from them. The experience definitely proved a suspicion I held when I was graduated from Tech: A big organization is no place for me. 'Well,' you might say, 'McGraw-Hill is not exactly a small outfit' and you would be quite correct. However, I should like to point out that I am working on the editorial staff of *Electronics* (with Don Fink '33) and that practically, if not in actual fact, each McGraw-Hill magazine operates more or less as an autonomous body. The net result is that the editorial staff is composed (at present) of three men, a woman make-up editor, and an art director. So, for all practical purposes I am with a small outfit. I've had quite a bit of editorial and radio experience, and while I have been here only about a month, it looks very much as if the job were made for me, and I for the job. I must admit having earned more in some of my other jobs, but one can't start at the top right away; the work is interesting; the group is mighty fine; I have lots of freedom and responsibility, am doing a reasonable amount of feature and routine writing with a little photography thrown in, and am still keeping up with my graduate courses at Columbia University. The contacts are decidedly very much worth while, and I am rapidly getting my feet firmly entrenched again in the radio industry. It seems that quite a few recent electrical graduates are going into the publishing game in one way or another. Don Fink '33 who is a fraternity brother of mine, is associate editor of *Electronics* and has been doing other writing, as you can see from the November issue of *The Review*. Vin Ulrich has been with *Radio Today* for over a year, and has dragged Bud Pflanz into the racket — at least Bud was in it for a while. I did lots of editorial work before going up to Tech, so it is simply a matter of getting back at the old racket, as far as my record goes.

"My last job over at R.C.A. Radiotron (as I believe I wrote you) was probably the most agreeable; it was in the commercial engineering section, and had a reasonable amount of editorial work connected with it. By the way, the commercial engineering section is headed by R. S. Burnap '16, and I met Herbert Neustadt '32 in the section, so for a while, the Tech fellows predominated.

On this present job I have seen more fellows in a month than I saw during the entire year. Fink and I have dinner with Art Hungerford '33, about once every two weeks or so, and once had lunch with him when George Best '34 dropped into town from Palmerton, Pa., where he is playing around for the New Jersey Zinc Company. Also saw Charlie Buchanan '34 on a recent trip of his to New York City. I must admit, however, that I don't see very much of my own Class. Joseph Lampert, VIII, came into the office the other day looking for a job. I still see Wilfred Grosser about once a month and he is still working down at the Federal Shipbuilding and Drydock Company at 25 Broadway. He went on a vacation trip this summer in a home-built kayak and got up the Hudson as far as Nyack when he discovered so much water had gotten into the boat that he had to bail out. Fortunately he was in the path of the Nyack ferry boats, one of which picked him up, or he might still be floating around the Hudson.

"Tom Blair is still with Associated Electric Laboratories, where his specialty is testing the artificial voice and ear equipment, which is used for testing telephone transmitters and receivers. This testing is for development and comparison of their products with other manufacturers' products and is not the routine factory testing. Harold Farr is working for the Schlumberger Well Surveying Corporation. His work consists of the study of rock strata by means of electrodes lowered into the drill holes for oil wells and by other electrical devices. He spent some time last year back at the Institute without, however, applying for a master's degree."

Frank Sellow, faithful Course Secretary for the architects, has been so busy lately that he offers this month only some news about himself and one or two others. Early in the summer he made a trip through Mexico, California, and the Southwest. Following that he returned in October from Los Angeles to work in New York for the Steuben glass division of the Corning Glass Works. His work is to design all sorts of glass decorations, tableware, vases, and so on. Frank has completed all the requirements for the degree of master in architecture, excepting his thesis which he expects to finish this winter. He reports that Biss Alderman is back at Tech to get his master's degree. He and Mrs. Alderman are living at 74 The Fenway, Boston. Frank also mentioned meeting Charles Scott in New Mexico. Scott was in our Class but was forced to leave because of ill health. He is now attending the University of New Mexico at Albuquerque.

We'll close the news with a letter from the Course X Secretary, Thonet Dauphiné, M.I.T. Graduate House, Cambridge: "Most of the chemical engineers of '35 who continued to take graduate work are now out in industry, with the exception of a few who are still working at the Institute. Du Pont claimed a number of the master's men: Lou Ga-

rono is working in the ammonia division in Wilmington, while Art Crowley is with the same in Belle, W. V. John Roberts, whom I saw on his way to the Dartmouth-Harvard game, is also in Wilmington on Du Pont's staff of trouble-shooting engineers. Reid Ewing, who wore the same pair of corduroy pants through two years of chem lab, is on the research and development staff of Linde Air Products Company, and is working in their Buffalo plant. His address is the University Club, Buffalo, N. Y. Another upstanding man is also in Buffalo, namely, Charley Smith, the Smitty of Dorm riot fame; he is assistant director of the Practice School's station in Buffalo. John Demo, former captain of the basketball team, is in research and development for Tidewater Oil Company at their Bayonne, N. J., refinery. John Howell is with the chemicals division of Union Carbon and Carbide and works in or near Charlestown, W. Va. At the other end of the country, in San Francisco, are Fred Draemel and Jim Seth, both of whom are working for the Associated Oil Company. Fred writes that Jim was married about three weeks ago. Those of us back at the Institute are Henry Ogorzaly, who is assistant director of the Boston station of the Practice School, and Roy Whitney, who has the same duties at the Bangor station. Jim Libby is working for his Ph.D. in chemistry, with his chemical engineering used as a minor. Ed Nicholson, Kelly Woods, and myself are instructing in chemical engineering, trying to get some work in edgewise on doctor's degrees. Most of us have been around all summer, and find that the Nautical Association, by making possible dinghy sailing, is a real godsend; you never feel that you are wasting your time when sailing, and it is swell relaxation." — ROBERT J. GRANBERG, *General Secretary*, Y.M.C.A., Knoxville, Tenn. RICHARD LAWRENCE, *Assistant Secretary*, 111 Waban Hill Road North, Chestnut Hill, Mass.

## 1936

A reporter is usually complaining because the editors have cut his copy, and this correspondent is no exception. This is by way of explanation for the abrupt ending of last month's column. It seems that our editors found themselves with about a column too much for the space available, with the result that Courses XVII and XVIII were out of luck.

*Courses I and XI.* We have received two more letters from the C. E.'s. The first is from Al Bagnulo, whom a purist would say was not a civil engineer but a sanitary engineer. We're not snooty, however, and we'll allow him to be considered one of the gang. Al writes: "As you already know, I am on active duty with the regular army. It is difficult to explain what I am actually doing since my work has included almost everything. I have discovered that an officer is expected to cope with any situation which might arise, and, as such, these are some of the tasks I have had to undertake: fit men with clothes and equipment; make



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menus and order food for company mess; check mess and supply accounts; design and supervise the construction of water drains; supervise mosquito control on the island, compute log scales for range drums—all these in addition to the routine duties of infantry and artillery drill and daily class work. The wide variety of work makes the army one of the most interesting professions." Al certainly isn't experiencing any monotony. He gives his address simply as Fort H. G. Wright, New York.

The second letter is from Jim Carr, who is down in Washington, D. C., with Timber Engineering, an organization which is promoting wood as a structural material. Jim is living at 1621 New Hampshire Avenue. He says: "I'm very happy to see old Course I blazing on to glory. I was up home about the middle of October and saw a few of the boys. I suppose you want some news. Well, here it is: Ray Svenson, VI-C, is working for the Sylvania (radio tube manufacturers) up at Salem. Carl Peterson, XV, is with the York Ice Machinery Corporation of York, Pa. Ariel Thomas is out at Illinois. Here is my choice tidbit, however. Joel Bulkley, XV, my exroommate, announced on Baccalaureate Sunday his marriage to Miss Doris Palumbo of the Medford Palumbos. The marriage took place early in January, 1936; the son of a gun held out on me. About two weeks ago, the Bulkleys became three (an eight-pound boy).—As for myself, I'm doing Washington up brown, socially, and getting some work done during the sunlight hours. (Those who know Jim will probably be able to read a lot between the lines here.) I am now designing and checking roof trusses, bridges, radio towers, grandstands, and what have you. These structures are all in wood employing the modern timber-connector principle. All joking aside, I never realized the possibilities of timber, and feel that the work is darn good experience. It is a small concern, and hence I feel that I am a cog in its wheel. I may get some inspection and sales work soon." From his letter, we would gather that Jim is pretty interested in his work. He ought to do a good job at selling because he is sold on the product himself. Question: What became of the big money-making scheme we used to hear about last spring?

Dan Burns was here at Tech on November 13—Friday at that—to see J.B. The government decided to make a PWA job out of Dan's position and cut his pay almost in half. He then decided that it would be cheaper to come back to Boston than to try to support himself up in Nashua. As he figured it, it would cost him money to work. Dan, it will be recalled, had been surveying for the Army Engineers on flood control work out of Nashua, N. H., and was chief of party for a time. Bernie Gordon is doing the office work for the organization. It is rumored that Bernie's pay will also be cut in order to fit the plans of the folks in Washington, but of course we all hope not. Dan thinks he'll soon have another

job, and I am inclined to agree with him.—By the time this is in print, congratulations will be in order for Carl Olson on the occasion of his marriage to Miss Averill Mae Carpenter of Melrose, Mass. The ceremony took place on Thanksgiving Day.

Things with me here at Tech are progressing satisfactorily. We've learned all about continuous bridges and now we're finding out about suspension spans. It's the same old round of lectures and problems, and there isn't much I can tell those who have been through it themselves. We are still awaiting word from some more members of our Course. What's become of our graduate students at Lehigh and Illinois, for instance? If we can get a few more letters from the lads, it might be possible to publish another of our private news letters.

Oh, oh, I almost forgot to tell about Frank Berman. I was wrong when I placed him in the Army, but I will not shoulder the blame because it was Professor Babcock or some one, who told me that. Frank has been working as a geodetic computer with headquarters at Commonwealth Pier, Boston, but now he is an inspector for the Army on one of the dredges working on the deepening of the Mystic River. The job apparently doesn't tax his energy and time too much; he manages to find time to drop around here at Tech while the dredge is closed down. For a while, Frank did a little extra work on the side (why is it that engineers are never satisfied with one job, but have to take on another for their spare time?) for Professor Spofford, reading proof on a new book on indeterminate structures.

Course II. From Jim Fergie Pat Patterson we are getting all the latest about the boys in Buffalo and Course II in general. He offers the following: Last night (November 16) the Tech men in and around Buffalo held a dinner meeting at the University Club. It was my intention to attend it and then tell you all about it, but I was unable to do so because a test on which I had been working had to be completed that night. From what Shorty Hubbard and Reid Ewing tell me I judge that the meeting was a success.

A letter came from Johnny Rowan a few days ago. He wrote: "As you perhaps know, the day after a I left Tech I started again as purser on the S.S. *Quebec* traveling from Montreal to the Saguenay River. As travel was heavy, I had a hard summer. From the newspapers I saw that it was pretty hot in Buffalo and Toronto, but on the river we had to have steam on when we got below Quebec even in July and August. We had a few special trips and they afforded me plenty of time to go ashore. I made one very interesting trip up to Lake St. John which is above the Saguenay River and visited the big plant of the Aluminum Company of Canada at Arvida, a paper mill in River Bend, and the Isle Malign and Chats Falls hydroelectric power plants. The Chats Falls plant was very interesting especially because it had

rained shortly before our visit and plenty of water was going over the 135-foot spillway and hitting the rocks below. The boat went into winter quarters at the end of September, and I have been idle since then. Things are pretty quiet here in the fall, so that I didn't make much effort to look for a job, but as things are picking up, I expect to land something soon. (See Laddy Reday, Johnny.) George McCaulley, who roomed across the hall from me at Tech, is working as structural engineer at Eastman's in Rochester."

Johnny also mentioned that Herb L. Shuttleworth had sent him a letter from Scotland saying that he was going to tour Europe in his car; also that Bob Willard is probably working at Brown and Sharpe in Providence, since he intended to start in September or October.

Karl Gelpke writes that he found it great experience to spend the summer working for York Ice Machinery Company, York, Pa., being one of the student engineers at Tech selected to work there. He has returned to the Institute after bagging a couple of scholarships and has his hands full with refrigeration problems and trunk duct layouts, and two theses to knock off in his spare time. He ran into Bill Nichols at a dance not long ago. Bill is with Bethlehem Steel at Quincy. (See December Class Notes.) Now and then Karl runs into Leo Kramer and Ken Swain, who are instructors in the steam lab. Jim closes with a hope for more news from the Course II gang next month. That's what we reporters are always hoping for—news.

Here we have some news in a clipping from the Boston *Herald*. It tells of the announcement of the engagement of Paul H. Richardson to Miss Virginia Lois Marshall of Newton, on November 1. Miss Marshall attended Emerson College with the Class of 1937.

Course IV. Dave Werblin has actually been seen around the Institute so we know that he is still able to be about. I don't know what the attraction is in these parts, but I understand that Dave makes a trip down from Lowell every weekend. He is working for the Wm. P. Proctor Company in that city, designing houses for which his firm furnishes the materials. Now that we've found out where to find Dave, we can certainly expect some news from his pen shortly.

Course V. Bob Sherman, as usual, has his story to tell about the members of Course V. I'll let him tell it in his own words: "While working in my office on November 7, or, as a matter of fact, 'bulling' with Fred Carten, whose propensity for that type of amusement is by no means on the wane, who should suddenly appear but Alice Hunter Kimball; she dropped into town for the weekend and could not resist the desire to come back to Tech. Although she spent over half an hour with us, we learned little, aside from the facts that her marital life is perfect and her position (apprentice teaching) interesting and showing promise for the future.

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"Barney Vonnegut, who is now here as a teaching fellow in freshman chemistry and is working with Professor Warren '24 of the Physics Department, is about to achieve recognition in the scientific world. That little newsmonger, Freddie Carten, tells me that Barney's thesis for his S.B. degree, on the crystal structure of bromine, is to be published in the December issue of the *Journal of the American Chemical Society*. Great going, Barney!

"More and more of our old gang seem to be returning to Tech; it is pretty grand to have them around again. Harry Donaldson has left his job with the Railway Express and is now killing time by working with Dr. Gamble '30 of the Chemistry Department in his study of boron. Admittedly he is biding his time until another position shows up, but he figures the experience gained can do him no harm whatever.

"The 'Ice-Pickers' Club is now going full force for the year, with Fred, Bud Milone, and me among its notable membership. It has this year achieved a certain distinction by serving green (vanilla) ice cream at its first meeting, and a violent shade of purple at its second. The effect of adding a chocolate sauce of a rather high starch content to the mass will not bear description. This activity has been the only one in which a group of us has been concerned, this year. As graduate students we have necessarily become more serious minded (?) and hence spend less time looking for things to do."

*Course VI-A.* Most of these electrical engineers are still around Technology finishing their courses, but we managed to get Mart Gilman to give us the following dope on this gang: "As is to be expected, there are only a few of the VI-A men who have finished and are out in the cruel, cold world working for the filthy lucre. One of these is Russ Bandomer, who worked hard this summer with Pete White on a thesis, just to get ahead of the rest of us. Russ is now with a consulting engineer in Boston trying to learn a few tricks of the trade. Pete, at the last report, had not made up his mind what job to take and so he was only gloating over the poor fellows grinding away at their theses. — Berny Cosman had to register for an hour of thesis so he could finish up his marvelous treatise, but he spends most of his time now on the new high-voltage x-ray equipment for the Collis P. Huntington Memorial Hospital, Boston. — Bob Caldwell has gone with General Electric at Schenectady as a test man, as has Charley Rife. Charley has not finished at Tech, however, and thinks he may come back some time and look at the books again. — Milner Wallace has located at Harrison, N. J., and has a position with R.C.A. down there. — Bill Saylor has recently stepped out and nailed a staff position in the Electrical Engineering Department. So now he spends his time reading catalogues and specifications in the measurements lab so he can really find what it is all about.

"Well, some of the boys are at the works, of course. Bob Hunt is at Schenectady with General Electric while O. B. Falls, Jr., Curtis Hillyer, Frank Phillips, Bob Cloud, and possibly one or two others are at the Pittsfield works going through the jobs as test men.

"The rest of the crowd keep the professors busy at the Institute: Norm Willcox has his hands full with thesis, graduate studies, and week-end trips to Hartford; Al Whitcomb, as usual, is taking things as they come, while Walt MacAdam tears his hair as he looks at the mess of tubes, motors, and other stuff he has strewn about the research lab; Dick Mabey and Boris Maximoff have also decided to stick around for a term just as a change. Of course they think about theses in their spare moments. — Lawrence Peterson and Henry Gibbs are also occasional visitors at the Institute's classes. — Lou Robinett is oscillating between Tech and the Telephone Company, all the time wondering why they want telephones on Block Island anyway. When he gets through designing the new circuits they probably won't. — Hank Johnson, Charley Hobson, and Ed Halfmann are also trying to finish and get the sheepskin. Ed, by the way, is designing a short-circuit anticipator that is a 'wow'. It catches all such faults at least an hour before their occurrence. Incidentally, your correspondent is himself laboring on some very important lattice filter designs — all in an effort to keep things clean.

"Well, if there should be any additions or corrections 'youse birds' should drop me a line at the Dorms. In any case let's have all the news or this column will drop to new lows."

*Course VI-C.* A short note, in a somewhat plaintive tone, from Jack Cook explains the absence of communications from the VI-C group: "With becoming shame it is necessary for me to tell you that I have received not one single, solitary word of information from any member of my Course during the last month. I neglected to send out any more letters, thinking that those who had not answered the first would come through with enough copy to keep you satisfied, but I have misjudged my men, the lazy bums. But now I turn over a new leaf; henceforth, I will so thoroughly pester each and every member of the group that soon I will have unearthed the most personal facts concerning the lives of even the most reticent of my flock. So cheer up, and wait patiently for the first in a series of startling *exposés* of the lives of communications engineers, M.I.T. variety." We can hardly wait for next month's Winchellizing.

*Course VIII.* Those physicists are still at it, with Charlie Evans passing out the news. He furnishes the following: "Carl White is now located in Southbridge, Mass., where he works for the American Optical Company. In case anyone wants to know what an electronicist is doing with an optical company, Carl adds that he is busy designing automatic lens-testing equipment, employing photocells

and other electronic devices. In a less cheerful vein, he suggests that all interested persons watch the death notices — he is going to buy a 1931 Ford Tudor. According to my calculations, all but one Course VIII man must be placed, now that Carl has crashed through with a job.

"Lea Spring started work last July 16 for the American Sheet and Tin Plate Company section of the Carnegie-Illinois Steel Company, which, strangely enough, is located in Pittsburgh. His job is in the physical testing department of the research lab, his work, mostly on sheets, tin plate, and strip. Lea is rooming with Bob Olsen, XV, who is working for the McKay Company. Running true to his Course XV tendencies, Spring is taking a course in public speaking at Carnegie Tech, which is located near his apartment house. His letter closes with the remark that Pittsburgh weather is even worse than Boston weather, which is quite a concession coming from him.

"The third letter was from Leonard Cohen. His job with the J & J Corrugated Box Corporation of Fall River, Mass., seems to be keeping him on the jump, although his routine duties don't take up a great deal of his time. After the routine is done he visits customers to talk over their problems with them, or else he works on plans for introducing scientific methods in parts of the plant. Being near Boston, L. P. manages to get up to school every now and then to use the library, and even spends week-ends in the Dorms, so if any of the fellows get back to school, they'd better keep an eye peeled for him." — This completes Charlie's letter, but I can't resist the urge to comment on this business of spending a week-end in the Dorms. I am living there now and do my best to spend the week-ends any place but the Dorms.

*Course IX.* While it is not headline news this month, we have a little bit about the Austins down in New York City. From Oscar Hedlund, who called on them when he was in the town, we learn that our newly-weds have taken an apartment about ten minutes' walk from Jack's place of business. His new address is Apartment IH1, 10 Monroe Street, New York City. Incidentally, Austin gained five pounds in a week while on his honeymoon.

Scott Rethorst recently wrote a letter to a few of his friends giving the dope on some of the Course IX and XV boys in a rather humorous style. Most of it was just what we've already told you with a little retouching, but there was a little real news about Scott himself. It will be recalled that he is with the Columbia Steel Company of San Francisco, Calif. He has finished the first part of Columbia's training course, touring the five mills at the plant. After two months with the inspection department, he will go to the mines and blast furnaces in Utah, and then do a trick in the sales department. Scott has become a regular California rooter; he claims he hasn't yet seen it rain. — Rumor has it that



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Hank Cargen has received a raise from J. Stirling Getchell, Inc., down in New York. While his basic salary is now sufficient barely to cover his expenses (what with trips to Boston every week-end), the company has a liberal policy of payment for overtime which helps to pay those extra train fares.

One of the boys in the A division of Course IX, Joseph Lukesh, recently favored me with a letter. He writes: "I am at present (October 30) employed at a stupendous figure by Sears Roebuck and Company in their technical laboratories here in Chicago. It was a great surprise to me to become a chemist, but that's what I am. I analyze and give my very valuable opinion of such items as furniture polish, olive oil, leather, soap, and so on. I also tried to discover the secret of a very secret direct-printing process. I was successful in that I found out where the materials could be obtained. In spite of my enormous salary (which I do not deserve) and my belief that my job is secure (I know the President of Sears Roebuck), I am going to run the danger of being placed in an institution by several of my classmates, including H. F. Herpers. I have, in short, decided to . . . return to the cloistered halls flanking the Charles. While in Chicago, I have . . . roomed with Hal Bellinson, Professor Schwarz's ('23) assistant, for a couple of weeks at a Y.M.C.A. Hal is back at school, and I shall shortly deprive the Sears laboratories of their sole remaining Tech man and leave them to the mercy of several Purdue graduates."—To which we can reply simply: "Well, well!"

Course X. The prize for letters this month goes to El Koontz for eight pages on the doings of Course X boys and a few others of the Class of whom he has heard. Since some of his news has already been presented and many of his parenthetical asides should not be seen in printer's ink, the following is an edited version of the letter, for which I hereby ask El's forgiveness: "Just before the opening of school, I happened to be engaged in that famous old game of fraternity rushing. While calling on one poor benighted freshman, whom should I meet but Jim Ullman, intent upon the same mission. It was news to me to find that Jim is living here in Cleveland Heights, a scant two blocks away from me, and is working for the Siegfried Loewenthal Company of Cleveland. Apparently, he's really being a chemical engineer, since the company operates a spirits distillery. (This will bear looking into, methinks.)

"A short time later while I was engaged in the shop part of my training course at the plant, I looked up from my work momentarily to stare into the eyes of Bob Newman. It seems that for three months, Bob had been working in the plant directly adjacent to mine, and neither knew the least bit about the other's whereabouts. Bob had finally found out where I was located and had come over to pay me a social call. Since he called at 10 A.M., I gather that his

job leaves him time to wend his way pretty much as he pleases. He's working for the General Electric Company in the glass division and is intent on research on various types of glass for use in lamp bulbs, and so on. On the side, he's doing a little brown-bagging at Western Reserve on glass chemistry and engineering.

"The first letter that comes to hand from my neat little pile of correspondence is from Lou Smith. I think I'll quote directly from parts of it since it speaks for itself: ". . . Working for the Carbide and Carbon Chemicals Corporation here in Charleston, W. Va., investigating the physical properties of Vinylite, our synthetic resin. I am going to be married January 2 to Miss Florence A. Bledson at Gloversville, N. Y. She went to Wheelock and last year to Boston University, and was the reason my technical education was so sadly neglected for four years. Mike Lach is also down here in the Valley of Lost Men working for DuPont in their Belle, W. Va., plant in the works laboratory. He tells me George Parkhurst is in the army now as a second "looie" on active duty." (An R.O.T.C. student who made good.)

"Gerald McMahon writes that he started on November 1 with the Continental Oil Company of Ponca City, Okla., as a junior chemical engineer. (It amazes me that Course X actually did turn out some chemical engineers. This lad is a long way from home by now, too.)—All Course X men are bound to remember Doc John Eberhardt. Lord knows we sweated enough under him while he was chief stooge for Professor Robinson in 10.31. Well, Dock has now risen to the position of director of the Buffalo station of the School of Chemical Engineering Practice at the Bethlehem Steel Company, Lackawanna, N. Y. Incidentally, John has presented to me the best possible use for old razor blades. He sells them to the steel company for scrap. With that misplaced toupee of his, he probably can more than meet their demands, too.—Don't misunderstand my feelings for John. He's a great gent; he practically did my thesis for me. By the way, they tell me that the title of my thesis crashed the *Fortune* article on M.I.T. It was probably given to indicate the horrible sort of stuff Tech students do for theses. If you remember, the title of the opus was 'The Monochromatic Emissivities of Refractory Surfaces in the Infrared Spectrum.'—John Eberhardt writes concerning the Practice School during the past summer: 'Herb Borden, Walt Squires, Charlie Holman, Don Kenny, Henry McGrath, Ossie Osgood, Jimmy Vaughan, and Tom Terry have been among those unfortunate enough to work under me. They haven't done badly, although I have had to ride them on occasion.'

"In a letter I had from George Robinson is found the following: 'Somehow or other, I was sandbagged into taking a five-year course at the Institute, combining economics and engineering, which tries to turn out superengineers. The only difference is that it's taking me five

years to learn that enough is enough. I'm spending most of my time in Doc Hauser's lab with such congenial playmates as Dick Denton, Wilbur Jordan, George Hain, and Jean Wagner, all of our Class and Course. Doc is my thesis advisor. The subject of the thesis Denton and I are working on together is, I think, an investigation of the flotation of minerals.'—I didn't think so many fellows were doing graduate work, but then Course X is a big one and here's the evidence.—(El ought to drop into the Institute once; the place is overrun with chemical engineering graduate students.—Secretary.)

"Bill duPont, in a very irritated letter to me, gives the low-down on his job at the DuPont Rayon plant at Richmond, Va., as 'mostly sweeping floors.' He goes on to say: 'What I've seen of Richmond looks pretty good, but unfortunately, shift work interferes with one's social duties or aspirations. Up to now my job has been a scrambled up affair. I've worked on each operation just long enough to get the hang of it. I'm now being broken in as a regular operator in the spinning room. As I remember, you never were much good in industrial chemistry (slander), so I might explain that the spinning room is where the viscose is precipitated in the acid bath. Remember?'—Bill duPont's old side kick, Norm Cocke, reports that he is engaged (don't come to any hasty conclusions, now) in a graveyard shift (from midnight on, to the unenlightened) of the student training course at the Calco Chemical Company at Bound Brook, N. J. He adds that Harry Herpers, V, is working in the lab with the same company.

"From the third member of the notorious DuPont-Cocke-Pettebone combine, I've had quite an amusing and lengthy letter. Mickey classifies himself as one of those Knights of the Vacuum who have come back to the Institute to get a master's in engineering and/or economics or something vaguely similar. Life at the Institute, he claims, is the same as always except that LIFE now comes in under the head of an ultrasmooth female from the Stuart Club. The only complications, he adds, are Princeton and Dartmouth. Mickey also wrote with regard to Norm Cocke that the latter spent a few week-ends with him and just missed breaking his fool neck aquaplaning, but is now working with Calco (see above) where he is, confidentially, supposed to be acquitting himself very well. In the same letter, Pettebone also comments on Willy duPont's fabulous salary, which he claims is being spent recklessly, nickel after nickel until the whole dime is gone. Some one almost talked Bill into trading in his ancient Chev for a Packard, but Bill couldn't quite see the idea of driving a champagne car on a beer income.—Jim Baker has been working all summer with the Monsanto Chemical Company in St. Louis, but is now back at the Institute struggling for his master's degree. Jim evidently did himself proud at Monsanto, as he expects to go back to them when he finishes work for his

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degree. (Another chemical engineer, cripes.) — From Phil Vincent comes a short note stating that he's at the University of Illinois at Urbana, where he is 'just living and making a feeble attempt at learning something constructive for a change.' Phil apparently got tired of splitting atoms at Tech and has now gone elsewhere to learn how to put them back together again. — Bill Tier is one of the Course X lads who has strayed slightly from the straight and narrow path of chem engineering. Bill is doing engineering and layout work for the Philadelphia Tramrail Company, 'makers of good conveyance systems.'

'Py Williams, who is working for the Ohio Boxboard Company at Rittman, Ohio, claims that the price of beer in his locality is less than the state sales tax. I agree with him. When you live in Ohio, they not only tax the pants off you, but they don't even make you like it. Py has evidently attained a position of some magnitude since he states that he has charge of chemical engineering problems at the power plant of his company. — The only news from Carl Mapes is that he's attending the Harvard Business School. That's sinking pretty low, too. — Ben Fogler is working with the A. C. Lawrence Leather Company at Peabody, Mass., and actually seems to be using the humidity tables we toyed with so many hours at Tech. This is the first reference I've had to the actual use of something learned in school from the books. Congratulations, Ben. Ben is at present working in the technical development division of the company, but seems to find time to go to a Wheaton dance occasionally. Ben also reports that he's heard from Pete Weinert, who is doing well with the Universal Oil Products Company of East Chicago, Ind.

'Our erstwhile exgolf champ, Rudy Ozol, writes that his first major triumph with the U. S. Rubber Products, Inc., of Passaic, N. J., was in annexing the trophy in the annual company golf tournament. Rudy seems to alternate his time between getting close to the latex business and tripping to Boston for weekends. He feels that there's a big field ahead in the rubber business and he finds his work interesting and also stimulating, since he has among his fellow workers Don Thompson, V, and the ex-Technology graduate student, Witcher, who kept us as undergraduates from wrecking the physical chemistry lab. — Walt Squires crashed through with a really lengthy letter packed with information about lots of lads in the Course X crowd. Most of this information I've included elsewhere in this letter or it has been printed in previous class notes. Walt's now back at the Institute working toward his master's. He offers the news that Andy Brisse is with Carnegie Steel in Pittsburgh, and that Wendell Fitch is in Akron with Goodrich and is engaged to the attractive little blonde he brought to so many of the Tech dances.

'Fred House gives a very interesting account of himself. Fred, whose home is in Buffalo, is working there with the

Buffalo Foundry and Machine Company in the capacity of stooge to the chief chemical engineer. He lists as his activities design of driers, evaporators, and flakers, and research on new evaporator design. It's all very secret stuff, though, according to Fred, and he didn't dare tell very much about it. According to his letter: 'My typical pose is pushing a slide rule while sitting on top of a 50-foot ladder.' — Undoubtedly, the most complete and interesting letter I received was from Johnny Speirs. John is located in Moorestown, N. J., which he classifies as the 'nicest small town I have ever been in.' He's working for the International Pulverizing Corporation, whose job it is 'to make little ones out of big ones, and the gadgets to do it with.' John, being the newest and youngest member of the staff of the company, has been doing everything from sales development, lab work, and drafting down to painting, pipe fitting, and cement laying. He mentions having attended one of the recent meetings of the Technology Club of New York, but bemoans the fact that the only familiar '36 face among the crowd belonged to Johnny Austin. In his letter he also notes that he's been in touch with Towers Doggett, who is working with the Riegel Paper Corporation of Milford, N. J., and with George Webb, who's working with the Hyvis Oil Company at Warren, Pa.

'That about completes my Course X news for the moment. I have, however, a little dope about some of the other '36 lads which may prove of interest to you. — Nate Ayer, XV, is at the York Ice Machinery Corporation, York, Pa., building air-conditioning equipment — 'We make the cold, you catch it' — and at present he is engaged in that proverbial Course XV entrée into business, rate setting. Nate is living at a strictly bachelor organization sponsored by the company, which makes it possible for the boys to live high at low salaries. From what I hear, Nate is living high, too, what with the low price of beer and the abundance of mill dollies in the neighborhood. — Art Cohen, VIII, has traded in his first job with a small radio manufacturing concern in New York City for a new one with the Ward Leonard Electric Company of Mount Vernon, N. Y. Art was a budding physicist at the Institute, but his first love was amateur radio and he seems happy with his new job of building electric control equipment. — Gordon Thomas, XV, is with the Riegel Paper Corporation (see reference to Doggett above) and is evidently learning more than it's right for a XV man to know. All summer he's been acting as chief tester at the plant with several samplers working under him, and now he's engaged in research on paper bleaching processes. Gordon has purchased for himself a shiny 1930 Packard phaeton with all the gadgets, and I understand he goes cruising around in it looking like a combination of Joe Gotrocks and the perennial college boy. True to habit, Gordon spends the weekends hither and thither.

'No word from Milner Wallace, VI-A, has come my way for some time, but I understand he's working for R.C.A. Radiotron at Harrison, N. J. Rumor hath it that he's the trouble shooter in the new metal tube department and acts as a combined engineer and efficiency expert. — I had a letter from Ford Boulware, III, who is out at Bingham Canyon, Utah. After Ford had been working as a miner for a couple of weeks, all the miners went on strike, so Ford went for a ten-day vacation in the mountains to hunt deer. When he returned, however, the strike was still on and now he's toying with the idea of dusting off the brass knuckles and becoming a strike breaker so that he can get to work again and prove all he knows about mining and metallurgical engineering. — Fletch Thornton, XV, is still in St. Louis with the Procter and Gamble outfit. At present, he's dragging around trays of soap, but he expects to become a foreman shortly, and then the sky's the limit. Fletch is evidently making money, as he plans to fly home for Christmas.

'Well, that finishes the news except for a little about Harry Essley and myself. As I believe Harry wrote you (see November class notes) we're both involved in an eight-month training course during which we're supposed to learn the electric motor business inside out (at Reliance Electric and Engineering Corporation, Cleveland, Ohio). So far in my course, I've weathered training in the experimental laboratory, the machine shop, the assembly floor, the test floor, and the sales order department. On November 23 I started work in the engineering department for a month. I had one very diverting interlude to my work when I was sent to Detroit with another lad in the training course to attend the annual convention of the Association of Iron and Steel Engineers. Reliance does a lot of business with steel mill drives and consequently the company had a large, attractive exhibition booth at the convention show. The other lad and I had the job of shipping demonstration motors and equipment to the show, setting up the booth, acting as attendants, trying to answer questions, and acting as assistant hosts to the visiting iron and steel men and their families. At present Harry is in Pittsburgh calculating data taken on tests of some Reliance equipment at the steel mills there. For the past few weeks he has been acting as stooge to the plant manager working on layouts for the new addition to our factory. So you see, he, too, has been having an interesting time. Some time ago, Harry, Jack Ballard, and I attended a meeting of the Cleveland Technology Club to have dinner and hear Professor Thresher '20 speak. Apparently, we were the only young lads at the meeting, but we enjoyed ourselves, later talking to Professor Thresher about Al Horton's career as assistant to Dr. Compton. Hallowe'en Eve the Association for the Promotion of Other People's Matrimony (Harry wrote you about this noble organization) threw a bit of a



## 1936 Continued

brawl and among the 50 or so assorted guests were Lou Flanders '33, Merryweather '34, and Bradner '35. It was a festive occasion and marked the official opening of our basement bar. Incidentally, the A.P.O.P.M. has lived up to its credo by recently marrying off one of the members and immediately replacing him with another one."

*Course XIII.* I thought Art Wells was still "at sea," but a letter received on the very day that these notes were due at The Review office indicates that he is now working back in New York after traveling about Central America aboard the Colombian boat, *Haiti*. He tells about meeting the around-the-world voyager, Woodman: "About the first of November, Harrison Woodman suddenly appeared in New York, finishing up his little five-month jaunt around the world. He started by boarding the S.S. *Europa* in New York on June 6. Landing at Southampton, he made an extensive tour of that seaport before going on to London by train. Woodie's stay in England allowed him to visit several other cities, including Liverpool and Manchester. The next long jump took him to Germany. When Woodie landed in Hamburg, he was met by a port agent, who escorted him to the most interesting parts of this busy seaport by launch and automobile. Therein lies a tale. Before Woodie's departure from New York, he had been given a couple of letters of introduction, one of them being to the captain of the *Europa*. With these as a start, our roamer gathered more as he went along — letters to port officials, letters to the captains of some of the vessels on which he would travel, and letters to influential residents in many of the cities he was to visit. From Germany, Woodie's route took him to Rotterdam and Antwerp, thence into France. After a few days in Paris, he went on to Marseilles, where he boarded an English liner which took him through the Mediterranean Sea to Port Said, through the Suez Canal and the Red Sea, and across the Arabian Sea to Bombay. There Woodie took to the railroad and crossed India to Calcutta.

"Continuing by water, Woodie's route took him to Singapore, Hongkong, Manila, and Shanghai. Crossing over to Japan, he visited Tokyo and finally Yokohama, where he boarded a Dollar liner which brought him by way of Honolulu to California. Crossing the continent by rail, Woodie arrived in New York, rolled up his sleeves, and found himself a job. You might think that he had done enough traveling for awhile, but not this man. He started work with the Colombian Line and on November 12 sailed for the Caribbean on the S.S. *Haiti*. He will spend a month or so on the ship, getting engine-room experience. Charlie Miller also sailed on the *Haiti*, November 12. He will make one trip as cadet and will then return to the Luckenbach Line, where he has a job waiting for him in the marine department. — Alan Hardman is another one of our number who is serving a spell at sea. He sailed on November 16 aboard

the American Scantic liner, *Scanstates*, for a 42-day trip to the Baltic; Göteborg, Copenhagen, Stockholm, and Helsinki being the ports of call. We hope that the North Atlantic will treat you right, Al, while you are getting your training down below the water line. — John Stapler is still assisting the operating manager of the Munson Line, but before the end of the week (November 28) he will make a shift, starting a six-week training in pier management and freight handling.

"On November 10, we had our own little marine banquet, which might have been called a farewell dinner for Woodman, Miller, and Hardman, who were sailing within the week. Others in attendance were Johnny Stapler, Norman Thomas, a XIII-C graduate who is now connected with the Luckenbach Line, and Dana Wrightington, Harvard '36, who attended ship operation courses at M.I.T. last year. Dana started work with the Grace Line in September. Since coming ashore, I have been working in the maintenance department of the Colombian Line, getting, among other things, a good idea of where the money goes and seeing why steamship lines do not pay big dividends."

This letter shows that Art is in pretty close touch with the members of his Course. The only news which I can add is that occasionally I see Carl Engstrom about the corridors of the Institute. Carl is an instructor in naval architecture.

*Course XIV.* For a small Course, Jack Hamilton certainly seems to drag out a good bit of news. His letter follows: "Kanner finally crashed through with a letter from Princeton — 2A, Graduate College — confirming earlier rumors of his whereabouts. He says, in part: 'We are about to study the gamma rays emitted by certain metals, such as cadmium, under neutron bombardment. We have a big discharge tube and make neutrons by bombarding deuterons with deuterons at 275 kilovolts.' Further: 'The bunch down here is grand and impressive. Dazed and uncomprehending, I have heard Einstein lecturing to the math club. He is a wonderful old gent, and has such a fine personality that one enjoys listening to him, even if one doesn't understand what the devil he's talking about.' Mort would seem to be perfectly well satisfied with his job and life at Princeton.

"Dick Hitchcock is doing corrosion research on 70-30 cupronickel, alloyed with small percentages of other metals. He is working 10 to 12 hours a day at times and has been playing semipro football to keep in shape, but finds time to drive home once or twice a month — about 300 miles — to Melrose, Mass. The attraction: one *fiancé*. The betting is definitely in favor of Hitch to be the first of XIV to take a personal interest in wedding bells, although Dick Robinson should run him a close second, and El Wade may turn out to be the dark horse in the race. (Place your bets.) — Harold Brown's job is still 99% analytical chemistry for American Steel and Wire

in Worcester. He works the clock around over a period of a month and is hoping for something a little less monotonous in the near future. Robbie and I are still engaged in our respective research problems, still shrouded in the mantle of secrecy.

*Course XVII.* Dick Hickman has received four letters from members of Course XVII since last month's notes. Angie Tremaglio writes: "Have been working as steadily as a bee since graduation and hope to stay busy for many months to come. At the present time I am running the West Haven, Conn., post office job. A neat little job which I expect to complete some time this winter. John (Viola) is finishing up the Nurse's Home and Sebbly is working for the company as an assistant superintendent on another post office in Glastonbury, Conn. Things are picking up fast in the building construction industry. The firm expects to land a good deal of work in the next few years."

Charlie Betts, who is with Selective Residential Construction, Inc., writes: "As for news, there is none. Still working here at the main office and at present in sole charge of straightening the plumbing system we use. Expect to be shifted to construction at any time now as at present the company is doing no field work at all. . . . Doing a little outside work at present, some 'routering' and some small supervision of changes in a restaurant — planning, estimating, and engineering the project."

Carota says: "I am still working for North-Eastern Construction here in Wilmington and doing about the same stuff. The job is going ahead pretty well and everything seems to be pretty well under control." — But still no word from Katahdin White. Dick says for himself: "If it's news that I have been given a raise, there is another item for you. We are still figuring the stability, and so on, of various types of spillway dams. With such irregularly shaped structures, the process is one of trial. After investigating the effect of changing the base by increments of several feet, we can plot curves to give us the toe and heel foundation stresses for a wide range of widths. Most of my work is on calculations, but I'm getting my hand in at drafting, also."

The above notes were meant for last month, but there just wasn't room for them.

*Course XVIII.* From Eli Grossman we learn that Ken Arnold now has a job. Eli writes: "Ken Arnold just accepted a position with the S. M. News Company, Inc., in New York. His job is of a statistical nature. Philip Di Salvatore did well on his entrance examination for the graduate school of mathematics at Princeton. He is attending five courses there. I suppose that I already told you that I left the Manhattan Life Insurance Company to take up work on a temporary basis with the United States Life Insurance Company in the actuarial department." — ANTON E. HITTL, *General Secretary*, Graduate House, M.I.T., Cambridge, Mass.

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